REPORT RESUMES

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THE INFLUENCE OF PARENTAL ATTITUDES AND CHILD-PARENT INTERACTION UPON REMEDIAL READING PROGRESS.

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TWO PILOT STUDIES OF THE RELATIONSHIP BETWEEN PARENT CHARACTERISTICS AND THE READING ACHIEVEMENT OF THEIR CHILDREN ARE REPORTED. THE FIRST STUDY COMPARED THE BEHAVIOR OF MOTHERS OF HIGH AND LOW VERBAL GIRLS IN TWO SEMISTRUCTURED INTERACTION SITUATIONS. TEN HIGH VERBAL AND 10 LOW VERBAL GIRLS WERE SELECTED FOR STUDY ON THE BASIS OF SCORES ON THE GATES READING SURVEY AND ON THE LORGE-THORNDIKE INTELLIGENCE TEST. ONE-TAILED T TESTS WERE USED TO ANALYZE THE DATA. MOTHERS OF HIGH VERBAL GIRLS EXHIBITED MORE POSITIVE SCORES ON SOCIAL-EMOTIONAL REACTIONS AND TOTAL WARMTH. THE PURPOSES OF THE SECOND STUDY WERE TO SHOW THE EFFECT OF A PARENT TRAINING PROGRAM ON SILENT AND ORAL READING AND TO CORRELATE MOTHERS' ATTITUDES WITH SILENT AND ORAL READING. SUBJECTS WERE 13 EXPERIMENTAL AND 16 CONTROL STUDENTS IN GRADES 3 TO 6. PUPIL PRE- AND POST-MEASURES WERE THE CALIFORNIA TEST AND THE GILMORE ORAL READING TEST. THE PARENT MEASURE WAS THE PARENTAL ATTITUDE RESEARCH INSTRUMENT. FOURTEEN WEEKLY SESSIONS WERE HELD WITH EXPERIMENTAL PARENTS. MEAN SCORES, DIFFERENCE SCORES, AND T TESTS WERE USED TO ANALYZE THE DATA. THE TREATMENT HAD A GREATER EFFECT ON ORAL THAN ON SILENT READING. POSITIVE ATTITUDES TOWARD CHILD REARING CORRELATED SIGNIFICANTLY WITH SILENT READING COMPREHENSION. A DESCRIPTION OF THE PARENT TRAINING PROGRAM, THREE APPENDIXES, AND A BIBLIOGRAPHY ARE INCLUDED. (BK)

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The Influence of Parental Attitudes and Child-Parent Interaction Upon Remedial Reading Progress

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University of Utah
Salt Lake City, Utah

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Cooperative Research Project S-266

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CHAPTER I

PROBLEM AND OBJECTIVES

I. PROBLEM

The research reported herein grew out of the project director's experience in working with parents of children with reading disability. As children referred to the University of Utah Reading Clinic were diagnosed and recommendations worked out for school and home, it became necessary to talk with parents. These experiences made clear the difficulties of trying to change parent behavior in a one-hour session. An informal study group developed out of attempts to improve effectiveness in working with parents. To make the study group activity relevant to each parent, tape recorders were placed in the homes to be turned on by the parent at dinner time. Parent-child interactions at the dinner table were then used as a basis for class discussions. Dinner-taping proved effective for instructional purposes but was not pursued as a research tool because of the practical difficulties involved. Following the first informal study group, plans were made for systematically building a parent-training program, evaluating its effectiveness, and conducting research on parent factors related to reading disability of children.

An initial survey of research identified environmental characteristics that were manipulable. Thus, the present study was planned to conduct a carefully controlled laboratory investigation of some of these parent variables and an evaluation of a parent-training program in which parents were helped to modify their modes of dealing with school related problems of their children. The laboratory study was designed to get at mother behavior toward daughters in a study-type situation and in discussion of opinion differences to see whether behavior of mothers of "high verbal girls" was different than behavior of mothers of "low verbal girls" of equal general ability. The treatment study was contrived as a gross attempt to have an effect on parents that would influence the reading ability of their children. It was reasoned that such a study would have several values as a preliminary investigation. If the treatment program were successful, it would provide a basis for future studies which would begin to isolate those parts of the training program that contribute most to variance in pupil reading gains. It would provide an opportunity to build a parent-training program which could then be used directly for parent training and indirectly to train teachers in contingency management so they might work directly with parents. Also, the research would provide some data on relationships between parent characteristics and reading ability of children and generate hypotheses for further investigation.

II. OBJECTIVES

The research and programmatic objectives of the project reported herein are as follows:

a. A systematic review of the research literature on parent factors associated with reading ability of children.

b. Specification of the nature of the parent-training program.

c. Tests of the following general hypotheses:

(1) Mothers of high verbal sixth grade girls will behave significantly different than mothers of low verbal sixth grade girls of equal general ability in two semi-structured interaction situations.

(2) Children (3rd to 6th graders) enrolled in remedial reading classes while their mothers participate in a parent-training program will make significantly greater gains in reading proficiency than will a randomly selected control group of children of the same ability and achievement from the same classes whose mothers are not enrolled in a parent-training program.

(3) Parent attitudes (as measured by the Parental Attitude Research Instrument) will be significantly correlated with reading gains of their respective children.

CHAPTER II

RELATED RESEARCH*

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Cultural Significance

The role of the parent in facilitating school learning is slowly receiving increased attention throughout the world as is evidenced in a UNESCO sponsored survey (Stern, 1960). In the realm of parent-teacher cooperation only five of thirty countries reporting had more than moderate home-school contacts. The gap was so keenly felt in Italy that a special agency was set up to improve home-school relationships. In about forty U. S. cities there are full-time supervisors, consultants, or specialists under the Department of Education concerned with education for family life and parent education. The International Reading Association has long recognized the significant role of parents in facilitating reading skills. Its membership is open to parents. For reviews of materials fo parents, program ideas, and some related research, see two special issues of The Reading Teacher (October, 1956, and May, 1965) published by the International Reading Association. An extensive parent handbook (Babitz, 1958) has been published by the

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*A few of the references listed at the end of the chapter are not cited in the review because they were not available to the authors.

California State Department of Education. Lloyd (1965) describes New York City's seven-pronged action program for developing the role of parents in reading progress. The program includes kinescopes, special films, radio programs, a reading materials exhibit, procedures for getting parent committment in the sense of support of the program and involvement in it. There are numerous pamphlets, books, and chapters in books which give practical suggestions to parents concerning their children's reading. For example, see in the list of references: The NEA publication on "A Briefing for Parents . . .," the Scott-Foresman publication titled "When Parents Ask About Reading," Chapter 18 in the Tinker and McCullough text, Nancy Larrick's Parent's Guide to Children's Reading and Eric Johnson's humorous guide for parents. Attempts to teach two-year olds to read are no longer journalistic oddities although some are quite unsuccessful (Cohan, 1961, Fowler, 1962). Mass media have been successfully used in teaching pre-schoolers to read. Brzeinski (1964) and McManus (1964) report on the Denver project discussed in more detail below.

Most readers are aware that increasing state control of education and policies influencing family life are characteristic of the Soviet society. In the draft "Program of the Communist Party of the Soviet Union" presented to the Party's Twenty-Second Congress (1961), p. 113) as well as in a report by American psychologists who visited the Soviet Union (Bauer, 1962, p. 80), there are clear statements of intent to supplant the usual general educational school in the USSR with the boarding school and to provide pre-school institutions and boarding schools for children of all working people. Preliminary reports show the boarding school children to be academically ahead of children in ordinary day schools (Education Recaps, January, 1966). In the USA the increase in programs for influencing family life through parent education or providing compensatory school-community programs is evidenced by the torrent of action programs stimulated by the Economic Opportunity Act of 1964 and the trickle of research programs on their effects (Harding, 1964). Hunt (1964) has outlined the psychological bases for using pre-school enrichment as an antidote for cultural deprivation. One of the boldest new projects currently in the planning stage is the development of a new town under the auspices of Arizona State University, several school districts, and a Goodyear Tire and Rubber Company subsidiary (Education Recaps, January, 1966). The town, to be called Litchfield Park, will be near Phoenix, Arizona. Some of the guiding principles on which there is apparent agreement are: Three or four years of age is the proper time to begin school, early schooling might be in small structures about the size of a one-bedroom house, and the parents' knowledgeable participation can have a major effect on the enjoyment value of the school experience. These trends will put increased pressure on researchers for coming up with answers to practical questions of how parents can effectively influence school achievement of their children as well as how schools and communities can effectively compensate for or prevent culturally disadvantaged backgrounds of children.

Focus of Review

The relationship between parent characteristics and the reading achievement of their children is the focus of this review. There are many related areas of research that are arbitrarily excluded from treatment here. Samples of excluded research areas are: Studies of parent characteristics and general school achievement (Thomas, et al., 1964)

(Karnes, 1963) (Erickson and Thomas, 1965) (Barwick and Arbuckle, 1962) (Shaw and Dutton, 1962) (Teahan, 1963), studies of parent characteristics and achievement-related behavior of children (Serot and Teevan, 1961) (Rosen, 1964) (Strodtbeck, 1963) (Minturn, 1964) (Sears, 1957) (Winterbottom, 1958) (Pumroy, 1964), studies of parent-influenced child characteristics and school achievement (Wattenberg and Clifford, 1962) (LaPere, 1965) (Walters, Loan and Crofts, 1961) (Natchez, 1959) and studies of parental determinants of general language processes and disorders (McCarthy, 1954) (Olim, Hess, and Shipman, 1966) (Project Literacy Reports, 1964, 1965). The remainder of the present review is discussed under three headings: General Reviews and Methodological Issues, Parent Characteristics and Reading Achievement, and Implications.

General Reviews and Methodological Issues

Research on the role of the parent in facilitating reading achievement is not plentiful and what little there is has not been brought together. One recent chapter on "The Role of the Home" in influencing reading development and personal growth does not cite any research studies (Overstreet, 1961). Russell and Fea in Gage's Handbook of Research on Teaching include seven reports on the role of parents in promoting reading achievement and note that much of the writing in this field is hortatory and inspirational rather than grounded in research. This observation was made a few years earlier by Brim (1959, p. 9). Robinson, Weintraub, and Hostetter (1965) cite only three relevant studies in a summary of research in reading during the period of July 1963, to June, 1964. Earlier summaries in the series also uncover few studies directly related to the topic of this review. The "language arts" issues of the Review of

Educational Research (April, 1958, 1961, 1964) covering the period from 1955 to 1964 cites few studies directly related to the focus of this review. A recent book (Lavin, 1965) on prediction of academic performance contains reviews of only five studies on the effects of family interaction patterns on general school achievement but includes an excellent chapter on the problems of measuring and predicting achievement. The more perplexing problems of measuring achievement gains are discussed in a special volume on that topic (Harris, 1963). A special issue of the IRCD Bulletin titled "Language Development in Disadvantaged Children" (1965) lists a 126-item bibliography on the broader problem of language development and covers many disciplines including sociology, anthropology, linguistics and psychology.

Methodological problems and findings in the measurement of family life variables including some directly relevant studies are reviewed by Hoffman and Lippitt in the Handbook of Research Methods in Child Development (Mussen, 1960). Other relevant chapters in Mussen's Handbook are those by Lambert, and Whiting and Whiting. A critical review of parent-education studies and their design limitations is given by Brim (1957) who has also written a rather comprehensive text (Brim, 1959).

Many of the reports of parent behavior and its effects on children include inferences about maternal behavior toward children at one age level based on data gathered at another age level. A study by Schaeffer and Bayley (1960) suggests that for some dimensions it may be difficult to make inferences about early maternal behavior toward children from interview data collected from the mother at a later date. These investigators tested and observed children and mothers during the first three years of the child's life and later (when the child was in the 9-12 age group) interviewed the mother alone. The correlation between interview data and observational data was .68 (N = 34) for the love hostility dimension but only .26 for the autonomy-control dimension.

Three methods for studying family interaction are described by Titchener and Emerson (1958). Questionnaires for assessing parental perceptions of their own behavior include the Parental Attitude Research Instrument, PARI, (Schaefer and Bell, 1958) and the Maryland Parent Attitude Scale, MPAS, (Brody, 1965). Brody found no clear-cut difference in predictability of behavior between the PARI and MPAS. The validity of the PARI for discriminating between parents of successful and unsuccessful readers has been supported by Macdonald (1963). Questionnaires for assessing the child's perception of parental behavior include the Bronfenbrenner Parental Behavior Questionnaire (Siegelmen, 1965) and the Child's Report of Parental Behavior Inventory (Schaefer, 1965).

The omission of fathers from many studies is appearing to be a methodological error since father presence or absence (Carlsmith, 1964) or the quality of father-child interaction (Peterson, et al., 1961) has been shown to be as intimately related to child behavior as attitudes of mothers. Also, Eron, et al., (1961) found that mothers and fathers did not agree in rating child behavior or interactions with other children and that fathers' ratings were very often more highly related to an independently obtained criterion than mothers' scores.

Bell (1965) reviews some methodological problems in developmental studies. Of particular relevance is the rarity of studies involving direct observation of naturally occurring behavior, the neglect of studies of the effect of children on parents, the changing socialization process and consequent difficulties in replication, the unfortunately common use of cross-sectional studies in lieu of longitudinal studies and the confounding experimenter effects in studies with rats and parents.

It will be necessary to use more complex designs in parent education studies to determine which treatment variables are contributing most to the total variance on outcome measures. A simple experimental solution to this problem is suggested by McClelland (1965) who begins with a complex treatment and by a process of experimentally subtracting treatment variables is able to determine which variables contribute most to measured outcomes. Some evolving statistical methods appear to be relevant to the task (Connor and Zelen, 1959) (Hays, 1963) (Schutz, 1965).

Many methodological issues relevant to educational experimentation in general are obviously relevant to the rather recently developing studies of parents and reading achievement. It is to be hoped that past errors will not be repeated in this emerging field of research. Some signs that researchers do not learn enough from experience are the occasional exultation over experimental treatments that are significantly better than controls (though accounting for perhaps 2 per cent of the variance in the dependent variable) and amazement at the fact that more severely retarded readers show greater raw score gains than average or superior readers after parents have been involved in a treatment program (ignoring ceiling and regression effects).

Parent Characteristics and Reading Achievement

While there are innumerable parent education programs, there are few directly focussed on helping parents improve reading achievement of their children and even fewer with built-in evaluation of treatment effects. Some programs without much controlled evaluation are nevertheless very promising (Lipchik, 1964). Studholme (1964) reports a three-month six-meeting group guidance program for six mothers of boys who were reading two to five years below grade level. Using a one-group pre-test-post-test design, reading achievement, mother's attitudes toward themselves, their sons, and their sons' reading problems, were assessed before and after treatment. Mothers' attitudes were assessed by ratings of typescripts of the group discussion sessions and by the Parental Attitude Research Instrument (PARI). A significant change was achieved in the attitudes of mothers toward their sons' reading difficulties from an initial largely negative orientation. Attitudes of the boys toward their reading lessons greatly improved while the mothers attended the group sessions but markedly regressed to old attitudes shortly after the sessions ended. The boys whose attitudes toward their reading lessons greatly improved were reported as making the greatest reading gains according to test results. This study though yielding only temporary effects and lacking in controls points up the need for maintaining a parent education program until reading gains are achieved and evaluating program effects in a follow-up period.

Regal (1964) reported on a parent education program which resulted in significant reading gains for experimental group children as compared with matched controls. In reading, 73 per cent of the experimental group met the criterion of .8 year gain in a 17-week period. The study is reported in general outline but appears to have yielded significant effects.

Denver's beginning reading project involving parents in pre-school readiness programs is yielding significant results (Brzeinski, 1964, McManus, 1964) according to initial reports of a continuing longitudinal study of parents and pre-schoolers who participated in TV instruction (about 150) and a control group who did not (about 150). Experimental group children showed significantly greater gains than controls in letter names and sounds, sight-word recognition, and ability to identify words by using the beginning sound and context. Parents participated in assisting children using a study guide "Preparing Your Child for Reading" (Houghton-Mifflin Co., 1963). The program ran for 16 consecutive Tuesdays at 8:30 p.m. Parents generally found it satisfying to work with their children in a home situation.

There are also many promising parent education programs in the preliminary stages of development. It may be some time before these programs are developed and descriptions of them published. One of the most promising ventures that have come to our attention is the exploratory work of Ogden Lindsley, Professor of Education, University of Kansas, at the Medical Center. He is reportedly planning to train parents to effectively accelerate desirable child behavior and decelerate undesirable behavior. The parent is to be trained in the general methodology of operant conditioning. Then the parent (wearing an ear phone) will be put in a teaching situation with the child. The trainer observing through a one-way viewing mirror will communicate with the parent by radio. In this way the parent may efficiently be taught what to do to get the behavior he wants from his child. Lindsley feels that it is essential to work with both father and mother where the mother is typically the direct change agent and where the father typically directs the operation.

Winterbottom (1958) found that earlier demands by mothers for independence and mastery behavior were related to a high need for achievement in eight-year-old boys. A later study (Chance, 1961) on the effect of independence training on reading achievement of first graders reports some thought provoking data relevant to Winterbottom's study. Chance found that children whose mothers favored earlier demands for independence make poorer school progress relative to their intelligence level than children whose mothers favor later independence demands. The results were more marked in girls than boys and more marked in reading than in arithmetic. Why is it that early demands for independence behavior are related to high need for achievement and low actual achievement? Conflicting studies such as these suggest the need for investigators carrying out a series of interrelated studies using the same measures and other procedures so as to yield interpretable results and also suggest hypotheses to account for the apparently conflicting results.

A series of small-scale cross-cultural investigations are being conducted concerning the environmental influences that underly the development of different patterns of abilities, including reading, spelling, and language abilities (Vernon, 1965). Thus far tests (mostly individual) have been administered to a reference group of 100 eleven-year-old boys in England, to 50 eleven-year-old boys in Jamaica, and to 90 Canadian Indians and Eskimos. Within this broad cross-cultural framework Vernon recognizes several environmental handicaps to mental development.

1. Physiological and nutritional factors.
2. Perceptual deprivation and conceptual deprivation during preschool and early school years (parents fail to answer questions, encourage curiousity, provide books, TV, etc.).
3. Repression of independence and constructive play (over-protection, arbitrary subjection, conformity).

4. Family insecurity and lack of playfulness (parental anxiety, irritability, punitiveness).

5. Female dominance (lack of male model for boy to identify with).

Brown and Deutsch (1965) formed an "index of relative deprivation" with six variables which correlated significantly with reading grade level scores. Among the six variables were: Parental aspirations for extent of the child's schooling, child's entry into conversation with adults at mealtime, and number of "cultural" activities engaged in by the child during a specified time period. The investigators found significant differences on the Gates Paragraph Reading Test between students high on this index and students low on it for a sample of 160 fifth graders. This study points the way to identifying specific characteristics of home environments rather than general socio-economic status measures in studies of relationships of socio-cultural influences on reading achievement.

A recent article (Farquhar, 1965) reviews two University of Chicago doctoral studies (Dave and Wolf) which examined home influences upon academic achievement and intelligence. These studies are also cited in Bloom (1964). Both studies were undertaken with the premise that ". . . it is what the parents do rather than what they are that is responsible for the educational environment in the home." The two researchers used the same sample of 60 fifth grade children, collecting data together and then each analyzing it to answer their particular questions. Each defined several "environmental process characteristics" or classifications of variables which were to aid the investigation. Six such characteristics were identified as determiners of the home environment's influence upon educational achievement:

1. Achievement Press--e.g., parents' aspirations for the child and for themselves,
2. Language Models--e.g., quality of parents' language and the standards they expect in the child's language,
3. Academic Guidance--e.g., availability and quality of educational guidance in the home,
4. Activeness of Family--e.g., extent and content of family activities,
5. Intellectuality in the Home--e.g., nature and quality of toys, opportunity for thinking in daily activities,
6. Family Work Habits--e.g., degree of work routine in home management.

Three classifications were chosen to examine the home influences upon intelligence:

1. Press for Achievement Motivation--e.g., parents' intellectual expectations and aspirations for the child,
2. Press for Language Development--e.g., emphasis on correct usage, quality of language models available,
3. Provision for General Learning--e.g., opportunities and equipment provided and encouraged for learning purposes.

Each of these "environmental process characteristics" was scored on a rating scale on the basis of a focussed interview with each subject's mother. This data was then combined with individual student I.Q. scores, achievement test scores (Metropolitan), and a measure of status characteristics (based on social class, father's occupation, and education of parents), giving an "Index of Educational Environment" (I.E.E.).

The correlation between the "Index of Educational Environment" and total fourth grade achievement test scores was +.80. This finding is quite similar to Fraser's (1959) .75 for home environment versus school achievement. When combined with other predictor variables such as I.Q., parent's education, father's occupation or index of social class, the correlation was increased. (I.E.E. + I.Q. accounted for 75 per cent of the variability in achievement.) It appears that the I.E.E. or a related measure could become a very powerful instrument in measuring environment for predictive purposes and for guiding the development of treatment programs. The correlation between the "Total Environmental Rating" (same as I.E.E.) and I.Q. (Henmon-Nelson) was +.69. An estimated 47 per cent of the variation in intelligence was accounted for in this assessment. Of particular relevance to the present review is the finding that the highest correlations with overall I.E.E. were obtained on word knowledge, reading, and language sub-tests of the Metropolitan Achievement Battery and the lowest correlation on arithmetic computation. Perhaps the most significant contribution of these studies is the clarification of manipulable process characteristics of the home that are related to school achievement, particularly reading. In this latter respect the contribution of this study was similar to that of the Brown and Deutsch (1965) study reviewed above.

A series of studies by Durkin (1961, 1963, 1964) suggest some of the home environment factors characteristic of children who began to read before entering school. The sample of 49 California children, who at the beginning of first grade had a median Stanford-Binet I.Q. of 121 and mean reading achievement of 2.3, had a mean reading achievement of 4.0 at the end of the first grade. Yet by the end of the third grade this group's reading achievement ranged from 4.4 to 6.0 with a median of 5.0 compared with a control group which ranged from 2.0 to 6.0. The Fifth Year Report (Durkin, 1964) does not give data on the original control group though it does report data on a control group that seems inappropriate to the writers. Holmes and Singer (1964, p. 147) plotted curves using Durkin's data and found, by extrapolation, that the median reading achievement curves of the experimental and control groups are expected to converge at the eighth grade level. In her second study Durkin's early readers were ahead of non-early readers by one year at the end of the first grade. The second study included an attempt to get equal distribution among different socio-economic classes in the sample and family interview data from control families. The experimental group consisted of 157 children in 35 schools who could identify at least eighteen words from a list of thirty-seven words and could make a score on the Gates Primary Paragraph Reading Test or a higher level of the test. From this experimental group a randomly selected sample of 30 was matched with 30 first graders who were not early readers. Families were interviewed in the first year and teacher ratings made and in the second year the children were interviewed. Some of the results based on family interview data are presented here. A higher per cent of non-early readers were in the lower-upper socio-economic group. Durkin explains that fifteen fathers of non-early readers finished college compared with only eleven of the early reader group. This finding supports our earlier recommendation that future studies focus on social process variables as in the previous two studies reviewed, rather than gross S.E.S. classification. Mothers of early readers had a higher educational level than mothers of non-early readers and more of them read to their children before they started school. Also, more of the mothers of early readers pointed out words and discussed pictures, but they say they did this in response to questions from the child. More of the parents of early readers felt that they could and should give preschool help while more of the parents of non-early readers felt it was the job of a trained person to teach reading and that parental help might confuse. The identification of specific home factors associated with early reading suggests that the school take these factors into account in their home-school programs. The critical note by Holmes and Singer (1964, p. 147) suggests to the writers that school evaluation needs to be expanded to measure a variety of potential outcomes (positive and negative) so that a choice of a school practice may be based on knowledge of many significant outcomes rather than simply general achievement measures. Studies similar to those of Durkin are appearing with somewhat conflicting results (Sutton, 1964, Plessar and Oakes, 1964). There are also, of course, supportive studies including the work of Malmquist (1958) in Sweden who identified factors related to first grade reading success and persisting through grade four. Mother's education, family income, number of books in the home, visual perception of letters and numbers and some personality traits were significantly associated with reading disability.

Bing (1963) studied the effects of child-rearing practices on the development of differential cognitive abilities in a group of 60 mothers of fifth grade children. The children were selected from a universe of 1,214 fifth graders. Two groups were formed with similar total I.Q.; one group with low verbal and high non-verbal ability and the other with high verbal and low non-verbal ability. The verbal ability measure was based on group intelligence tests and reading achievement tests. Child-rearing practices were assessed through interview, questionnaire, and a mother-child interaction situation. "In accordance with predictions, high verbal group mothers (whose children were low in either spatial or number ability) gave their children more verbal stimulation during infancy and early childhood, remembered a greater number of their children's early accomplishments, let their children participate more in [meal] conversations, punished them less for poor speech, bought more story books for them . . . criticized them more for poor academic achievement, used anxiety arousal more in cautiousness training, showed less permissiveness with object experimentation, had more restrictions, and perceived their husbands as stricter than themselves. Contrary to predictions, not the mother's but the father's reading time was very significantly higher for the high verbal girls' group." Results of the mother-child interaction session revealed that "high verbal group mothers were found to be higher than low verbal mothers in all categories of helping behavior, in pressure for improvement, in giving help after request by child, in asking the observer more questions, in giving more physical help, and in giving such help sooner. Contrary to the prediction, high verbal mothers were also higher on withholding help and disapproval than the low verbal mothers." "The findings led to the general conclusion that discrepant verbal ability [higher verbal than non-verbal] is fostered by a close relationship with a demanding and somewhat intrusive mother, while discrepant non-verbal abilities [higher non-verbal than verbal] are enhanced by allowing the child a considerable degree of freedom to experiment on his own." The finding on mealtime conversations supports the Brown and Deutsch study reported above and an earlier study by Ladd (1933).

Milner (1951) studied a group of first grade students in an attempt to examine their reading readiness and patterns of parent-child interaction.

The Haggerty Reading Examination and the "language factors" sub-tests of the California Test of Mental Maturity were administered to the group to assess the children's reading readiness. Forty-two children were included in the study, the 21 children obtaining the highest language factor scores and the 21 children obtaining the lowest language factor scores. A series of four interviews were set up, the first with the children and the later three with the parents. The interviews were constructed along the "buckshot principle," asking a wide variety of questions and hoping that those which would prove significant were included. Milner reports conclusions consistent with those of other studies. High scoring children on the language factor scores tend to be surrounded by a richer verbal family environment than low scoring children (e.g., "more books available to them" and read to them by personally-important adults). High scoring children also tend to have more opportunities for emotionally positive interaction with their parents than do low-scoring children (e.g., they are taken places by their mothers; meal-time is a focus for total family interaction; affection by parents is expressed in a regular, overt manner).

Strodtbeck is implementing a "Reading Readiness Nursery School" (1964) and has conducted other research which has produced provocative techniques and findings related to the present review (1951, 1954, 1965). Preliminary results in the Nursery School are encouraging but because of the exploratory nature of the evaluation are not reported here. Strodtbeck argues that the unique characteristic of the middle-class home that facilitates the development of verbal ability in children relates to the power structure of the home. In his earlier studies of family interaction he set up situations where families indicated their opinions on a questionnaire and then were given a sheet on which items revealing differences of opinion among family members were clearly marked. Then they were put in a room and asked to try to agree on one position that best represents the family's opinion. Strodtbeck noted that the ultimate conclusion on the revealed difference was recognized by the three family members after about one-third of the conversation. The remaining two-thirds of the discussion was devoted to explaining how the original difference did not really arise from a difference in values but rather from different interpretations of the specific example in the item. Where two persons of power have small value differences, yet parallel commitment to a core set of common values, one must use language carefully and recognize subtle differences in order to attain goals. The child in such a home uses language more and hears complex language because protracted verbal exploration of action possibilities is necessary to achieve one's aims while maintaining family solidarity and rank (i.e., face) of individual members. Thus, Strodtbeck argues that compensatory programs for culturally deprived children must include increasing the absolute power of the child in the school setting thus reducing fear and motivating verbal participation to attain desired ends. His studies are important methodological contributions to assessing parent-child interactions in controlled but realistic situations.

Implications

The research reviewed above has specific implications for treatment programs and further research. With respect to program development, some cautions are, of course, necessary. Correlation does not necessarily mean causation, some findings are based on small samples, many findings have not been replicated by other investigators, and the combination into a new treatment of variables found to be effective in separate studies changes the treatment in unpredictable ways. Nevertheless, treatment programs go on while we await more definitive research. The difficulties in making practical applications of research findings are apparent to anyone who has made the attempt, but it would be foolish not to make best guesses based on what data we have. Thus, it would seem sensible to develop treatment programs for parents or compensatory school-community programs for children based on specific research findings cited above. And for those in the practical treatment business rather than the research business, another suggestion is in order. It is possible to try out treatments, revise them on the basis of experience, and finally arrive at a powerful treatment. At that point it is well to make a record of the details of the treatment and to have another practitioner utilize the same treatment. When treatment effectiveness has been replicated with different samples by different practitioners, we can have confidence in the effectiveness of the treatment. We may not, of course, know what it is about the treatment that makes it effective, but that is a task discussed elsewhere in our report. The message for the practical application of results is that one might develop a treatment program based on the findings of previous research, develop or select evaluation instruments for as many expected outcomes of the program as seem significant, revise the program and evaluate program effectiveness until an optimum efficiency is reached, and get another practitioner to try the program to see if he gets comparable results.

For the researcher the implications are varied. Parent characteristics have been investigated with respect to rather molar measures of reading ability. Perhaps Deutsch's (1965) attempt to relate environmental processes to more specific skills (such as auditory discrimination) points the direction to more significant clearer relationships.

Researchers also might profit from the lesson by Schutz (1965) who found so many studies with significant treatment differences that accounted for so little variance in the dependent variable measures. Investigators might well apply these tests to their own treatments and dispose of or modify treatments not contributing much to the variance. Or, if a number of treatments seem similarly effective, it may be well to search for the conditions (outcome measures, child characteristics, etc.) under which the methods are differentially effective.

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CHAPTER III

EXPERIMENT ONE: A LABORATORY INVESTIGATION OF READING ACHIEVEMENT AND MATERNAL BEHAVIOR

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Hypotheses.--Mothers of high verbal sixth grade girls will behave significantly different than mothers of low verbal girls in two semi-structured interaction situations. Specifically, mothers of high verbals will demonstrate: Fewer opinion differences with their daughters, more positive affect, less negative affect, more total warmth, less total talk, and less "initiative" of discussions. The specific measures involved in the hypotheses will be described below.

The Sample.--All the sixth grade girls in three schools were given the Gates Revised Reading Survey Tests (Form A, 1960) and Lorge-Thorndike Intelligence Tests (Form 3A, 1954). Girls with a total I.Q. of 105 or greater and with a verbal-nonverbal I.Q. difference of 15 points or more were selected in the first screen. Eliminated from this group were those without a mother living with them and those possessing serious physical handicaps, or whose health or family situation (constant moving) might, of itself, be a cause of disability in school achievement. The remaining subjects were divided into two groups with matched total I.Q. scores: (a) High verbals, or those with reading scores 1.1 grades or more above grade placement and a verbal I.Q. of 15 or more points above the nonverbal, and (b) Low verbals or those with reading scores 1.1

grades or more below their grade placement and a nonverbal I.Q. of 15 or more points above their verbal I.Q. scores. This screening resulted in 28 girls. From this group a final sample of 10 high verbals and 10 low verbals were selected, the other eight being dropped out to maintain a matching of socio-economic status of parents. Mothers were invited to participate. All responded positively, but mothers from lower socio-economic areas required several appointments before final arrangements were made.

The Semi-Structured Situations.--Two situations were set up in which mother-daughter interactions were observed: A Vocabulary Review Session and An Opinion Difference Discussion.

For the vocabulary review Markle's Words program (1963) published by Science Research Associates was sent home with the child with instructions to the parent and child to study the first three sections in any manner they chose for one week, or longer, if they wished. At the end of the study time the mother was invited to come to the school to administer a "review" on these sections. When the mother and daughter arrived for the "review" session, they were asked to fill out an "Opinion Survey" to be described below. The experimenter then put mother and daughter in a room set up with a tape recorder and gave the daughter the review questions and the mother the answer sheet. A sample of the review questions is presented in Table 1. The experimenter then said, "These are the review questions" (to the daughter), "and these are the answers" (to the mother). "You may work on these questions in any manner you choose. Please consider this merely a review of the material you have read in the vocabulary book you took home. Signal me when you have finished this material."

TABLE 1

SAMPLE OF QUESTIONS USED IN THE VOCABULARY REVIEW SESSION

Item	Question	Answer
11.	The suffix of payable is _____.	able
12.	The prefix of unladylike is _____, meaning _____	un, not
13.	The following nonsense roots do not exist in our English language, but they are fun to work with. See if you can produce the 'asked for' prefix or suffix.	
	He had several pieces of pie. If we pretend that 'splunk' means a piece of pie, you can say, "He had several _____."	splunks
	The children are full of joy. If 'jig' means or equals joy, you can say, "The children were _____.	jigful
19.	Give the definition of this word in terms of its parts: (Make sense in the order).	
	Propeller	
	The prefix 'pro' means 'forward.'	A thing that pushes (something) forward.
	The root 'pell' means 'push.'	
	The suffix 'er' means 'thing that . . .'	
	So, a propeller is _____ _____ _____.	
26.	. . . A bill you can pay is _____.	payable

TABLE 1 (Continued)

Item	Question	Answer
27.	. . . He said it wrong. If 'gleabed' means or equals said, you can say "He _____ it."	mis gleabed

When the review session was complete, the experimenter brought in the "Opinion" check lists that the mother and daughter had each filled out. Items on which they differed were clearly marked. (See Table 2 for sample items.) The opinion difference discussion was introduced by a statement from the experimenter along the following lines: "As you might expect, there are some of these questions on which you don't agree."

TABLE 2

SAMPLE ITEMS FROM "OPINION STATEMENTS FOR CHILDREN AND THEIR PARENTS" USED IN THE "OPINION DIFFERENCE DISCUSSION"

Instructions: For each statement below circle A if you agree with the statement, D if you disagree.

A D 1. If a parent laughs with the children when they are supposed to be learning something, things get out of control.

A D 3. Young people are difficult to understand these days.

A D 6. A parent should never tell a child he doesn't know the answer to a question.

A D 9. Children usually have a hard time following directions.

A D 24. It takes about 30 minutes to warm up before you can really begin studying.

I would like you to discuss these questions, one at a time, and see whether you can arrive at some decisions concerning them. I'll give each of you your paper with a circle around the item number of the items on which you differ. For example, Mrs. _____, you differed with _____ on number _____. I'll turn the recorder on again and go into the other room. Call me if you have any questions concerning procedure or when you've finished discussing these questions." The parent-daughter teams were told they could "agree to disagree" only if they raised the question to the experimenter.

Scores Based on Mother-Daughter Interactions.--Six scores were derived from the data gathered on mothers and daughters. In parentheses following each score description is an abbreviation that will be used hereafter in referring to that score.

1. Number of "Opinion" inventory items on which mother and daughter differed (N-Diff.).

2. Positive social-emotional reactions of mother. This score was based on a modification of the Bales (1950) and Strodtbeck (1963) system of interaction process analysis. It includes: Showing solidarity, raising other's status, giving help or reward, showing tension release, joking, laughing, agreeing, showing passive acceptance. The Spearman Rho between rankings of six cases by two judges was 1.00 for this score (Pos. Affect.).

3. Negative social-emotional reactions of mother. This score was also based on the Bales-Strodtbeck system. It includes: Disagreeing, showing passive rejection, formality, withholding help, showing tension, showing antagonism, deflating other's status or defending or asserting

self. The Rho between two judged rankings of six cases on this score was .72. This rather low agreement was due primarily to differences on one case. In cases of interscorer disagreement on this score and others which follow, the experimenter's judgment was used on the basis of listening to the actual tapes over and over instead of re-analyzing the transcribed protocol. For scores 1 and 2, the conversations were rated in episodic units where the discussion on each opinion item was considered as one unit (Neg. Affect.).

4. Warmth of mother toward daughter (Warmth). This score had a rather low interscorer reliability (Rho = .60). It is based on a rating on a 7-point scale of the total conversation record of mother-daughter interaction.

5. Total mother talk (M-Talk). This score was derived from mother talk in number of words divided by 250 to get a score in terms of page-units.

6. Mother initiated discussion (M-Read). This score consisted of the percentage of occasions that the mother read a "review question" or an "opinion statement" in getting the discussion started. The score was adjusted by an arcsine transformation before analysis of data was conducted.

Results and Discussion

A sample of the mother-daughter interactions on the Opinion Difference Discussions is presented in Tables 3 and 4 below. Table 5 contains a summary of the comparisons between mothers of high and low verbal girls on the six scores described above.

TABLE 3

SAMPLE OF INTERACTIONS BETWEEN MOTHER (M) AND LOW VERBAL DAUGHTER (D) IN THE OPINION DIFFERENCES DISCUSSION OF THE OPINION STATEMENT "THE HARDEST PART ABOUT STUDYING IS CONCENTRATING"

M. (Reading sort of to herself) ". . . a dull or stupid assignment. What is a dull or stupid assignment?"

D. (Mutters under her breath.)

M. (Ignoring daughter) "Oh, I guess we agree on that one. Let's see, the next one says that the hardest part of studying is concentrating and I agree. What do you think is the hardest part of studying? You disagreed."

D. "Sometimes it is concentrating. Sometimes it isn't; it is just plain old figuring."

M. "What do you mean figuring?"

D. "Oh-h-h . . ."

M. "It is not all figuring, now is it?"

D. "Sometimes it is both."

M. "You were thinking of your arithmetic? Homework or reading--or what? You were thinking of your arithmetic. On your arithmetic, it is concentrating. It isn't figuring, on those. Mostly if you know your multiplication tables and adding, there is no problem on figuring. So, I think that it is more a problem of concentrating. Now let's see, what's next---hm-m-m . . ."

D. (As mother sort of mutters to herself the daughter is muttering under her breath without any apparent recognition by the mother. We were able to pick up what the daughter said with a set of earphones and adjustment of volume control.) "You bitch. Why don't you shut up. You're a shitten bitch. You hag . . ."

M. (Apparently not hearing daughter.) "Now let's get this next one. It's about . . ."

D. "Let's quit."

M. "Now look!"

(Tape recorder was then turned off.)

TABLE 4

SAMPLE OF INTERACTION BETWEEN MOTHER (M) AND HIGH VERBAL DAUGHTER (D) IN THE OPINION DIFFERENCES DISCUSSION OF THE OPINION STATEMENT "STORIES IN SCHOOL BOOKS ARE NOT VERY INTERESTING"

D. "Thirty--Stories in school books are not very interesting. I disagree. I guess you wouldn't know about them now, but it depends upon the book.

M. "I'm sure that it does. Well, what has been your experience?"

D. "Now, you take Miss Richards, she gets these books, you know the kind, for book reports. She gets these specific kinds of books and you can get the one you want to and put it back. They are very interesting."

M. "Sounds good."

D. "I suppose this is what they mean."

M. "How about the little "See the cat . . ."

D. "Oh, we don't have those in our grade."

M. "I know, but remember back a year or two, when everyone read the same book. How were they then?"

D. "All I remember is that they were all too easy."

M. "But interesting?"

D. "Jane can run, interesting?"

M. "O.K."

D. "Jane ran to the dog. I see Jane."

M. (Laughing) "You made your point, dear."

D. "But the pictures were pretty good!"

(Both laugh)

TABLE 5

COMPARISON OF MEANS OF MOTHERS OF HIGH VERBAL GIRLS AND LOW VERBAL GIRLS ON NINE VARIABLES

Variable	N = 10 High Verbals Mean	 S.D.	N = 10 Low Verbals Mean	 S.D.	*t*
1. N-Diff.	14.30	6.00	16.20	3.40	.03
2. Pos. Affect.	1.60	.35	.57	.35	6.86*
3. Neg. Affect.	.62	.41	1.35	.18	-5.21*
5. Warmth	5.00	1.25	2.50	.71	5.26*
5. M-Talk	1.80	.19	1.63	.46	1.07
6. M-Read.	.94	.09	1.54	.76	1.37

*Significant beyond .05 level.

1. Although the low verbal girls and their mothers showed more disagreement in opinions on the "Opinion Statements . . ." than the high verbal girls and their mothers, the difference did not reach statistical significance. While significantly more low verbal than high verbal girls disagreed with their mothers on the one statement "Children ask too many questions," this isolated item difference would need replication in other samples.

2. Mothers of high verbal girls exhibited significantly more positive social-emotional reactions (Pos. Affect.) and showed more total warmth (Warmth) than mothers of low verbal girls.

3. Mothers of low verbal girls exhibited significantly more negative social-emotional reactions (Neg. Affect.) than mothers of high

verbal girls.

Some of the other scores yielded differences that approached statistical significance but it would be hazardous to speculate on these. The major finding of the study supports most previous research findings with the exception of Bing's (1963) unusual finding that mothers of high verbal fifth grade girls showed significantly more disapproval and withholding of help than mothers of low verbal girls. An investigation of the reasons for the discrepancy between these two studies is likely to lead to more complex statements involving patterns of parent behavior rather than single general dimensions of positive or negative affect and will also likely lead to discoveries of interactions between parent characteristics, child characteristics, and task characteristics. One plausible explanation of the inconsistency between our study and the Bing study is that a parent who shows much warmth is likely to be effective in using "disapproval" and "withholding help" because the child must then "behave" to get the previously experienced and desired warmth.

Applying the Omega Squared Test (W^2) to the significant t values (W. L. Hays, Statistics for Psychologists, 1965, pp. 327-328) we find that the experimental variable (mothers of high verbal girls versus mothers of low verbals) accounted for 70 percent of the variance on the positive affect measure and 57 percent of the variance on negative affect and total warmth. This striking a finding is certainly worth a follow-up.

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CHAPTER IV

EXPERIMENT TWO: THE EFFECT OF A PARENT-TRAINING PROGRAM UPON READING ACHIEVEMENT OF CHILDREN

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A description of the parent-training program is presented in Chapter V. The present chapter describes the hypotheses, the remainder of the procedures, the design and the results of the experiment.

Hypotheses.--The two basic hypotheses of this study are:

1. Pupils whose parents are involved in a training program will show greater oral and silent reading gains than a control group whose parents are not involved in the program during the experimental period.

2. Mothers' attitudes as measured by the PARI (Parental Attitude Research Instrument), Factors I, II, III are significantly correlated with oral and silent reading gains.

Sample.--In late spring all children who would be in grades three to six the following year in two elementary schools were tested and those with reading ability a year or more below grade level were selected out. "Invitational Letter To Parents" (Appendix A) was sent to all parents of children so identified. There was approximately a 50 per cent return which amounted to a sample of 45. Since we could only enroll 20 students in each school in remedial classes, 40 students were invited to the remedial class on condition that the mother (and if possible father) attend the parent class. Students were then randomly assigned to experimental or control group for the parent treatment. Attrition throughout the period of the experiment reduced the sample to 29. There were 13 experimentals and 16 controls in the final group. Both experimental and control parent groups were taken through a parent-training program. The experimental groups participated first. After post-testing of all pupils in reading (the end of the experiment), control group parents participated in the training program.

Means and standard deviations for the experimental and control groups on the instruments used in the study are included in Appendix C. The *California Test of Mental Maturity* was used as an intelligence measure. The mean I.Q. score on the *CTMM* for the control group are: Language 80.7, Non-language 91.9, Total 84.4. The mean I.Q. scores on the *CTMM* for the experimental group are: Language 86.6, Non-language 99.5, Total 91.5. Although the means of the I.Q.'s for the control and experimental groups are different, a *t* test analysis applying Welch's correction for degrees of freedom (Winer, B. J. *Statistical Principles in Experimental Design*, New York: McGraw-Hill, 1962, p. 37) disclosed that the differences are not significant at the .05 level.

The mean grade placement of the control group in September was 3.7. The mean grade levelreading achievement scores for the control group in September were: *Gilmore Oral Reading Test*: Accuracy 3.0, Comprehension 3.3; *California Reading Test*: Vocabulary 3.9, Comprehension 3.5, Total Reading 3.7. The mean grade placement of the experimental group in September was 4.8. The mean grade level reading achievement scores for the experimental group in September were: *Gilmore Oral Reading Test*: Accuracy 2.6, Comprehension 2.7; *California Reading Test*: Vocabulary 2.9, Comprehension 2.5, Total Reading 2.7.

Pupil Measures

The students were tested during the week of September 10, 1965, before the remedial reading program or the parent treatment group had begun. During this pre-testing each student was administered the California Reading Test, Elementary Level, Form X, on a measure of silent reading achievement. The Gilmore Oral Reading Test, Form A, was also administered at this time to obtain a measure of oral reading achievement. The California Short Form Test of Mental Maturity was administered as a group measure of intelligence.

During the week of January 28, 1966, following the remedial treatment, the students were tested to obtain post-test measures. At this time the California Reading Test, Elementary, Form W, was administered to them as well as the Gilmore Oral Reading Test, Form B.

Parent Measures

During the week of September 10, 1965, the mothers (fathers were also encouraged to attend) of the combined experimental and control students were assembled and told, in general terms, about the project. They were informed that all would be in a training program but in order to keep the size down some will participate in the fall and winter and others in the winter and spring. Positive results of previous programs were presented. At this time the mothers were administered the Parental Attitude Research Instrument (PARI). Because of unexpected and uncontrolled contamination effects,it was decided that a post-treatment administration of the PARI would not be possible or meaningful. It was found that many of the parents had participated in another study in which the PARI was used.

The testing was done by members of the research staff with the exception of the Gilmore Oral Reading Test which was administered by the remedial reading teacher who was working with the students in the remedial class of the project. The remedial teacher did not know experimentals from controls. An attempt to keep this information from leaking to her involved asking all parents (experimentals and controls) to tell their children they were participating in a class at the University throughout the experimental period. The California Reading Test was administered in one testing session in each of the two participating schools. In each of the schools the participating students who were absent during this testing period were administered the California Reading Test later in the week by the remedial reading teacher.

The Parental Attitude Research Instrument was administered to the parents by the project director during the initial Spetember meeting.

The achievement testing following the remedial treatment was conducted in the same manner as the pre-treatment testing.

The reliability coefficients reported in the Manual for the California Achievement Tests for the reading tests are .91 - .95 using Kuder-Richardson formula 21. The alternate form reliability coefficients of the Gilmore Oral Reading Test for the accuracy scores are approximately .85, for the comprehension .67, and for rate .72.

The reliability coefficients reported for the California Short Form Test of Mental Maturity range from .80 to .87 based upon Kuder-Richardson formula 21 coefficients of equivalence.

Schaefer and Bell (1958) report PARI reliabilities, based upon internal consistency and test-retest reliabilities of the test sub-scales. These reliabilities range from .40 to .77 with an average reliability of

.64.

Design.--A simple pre-test-post-test control group design was utilized. Parents of children in grades 3 to 6 who had reading disability formed the population out of which were selected those who volunteered to participate in a parent training group while their children were enrolled in a remedial class in school. The remedial classes met pupils in groups of two to five students and the treatment was the same for both experimentals and controls.

The first analysis consisted of getting the correlations between the pre- and post-test scores of the students on the California Reading Test and the Gilmore Oral Reading Test. In this analysis the students in the experimental and control groups were combined into one group for the pre-test and one group for the post-test. This correlational analysis was done for two reasons. It enabled us to study the data in correlational manner for each sub-test. Secondly, the analysis gave us a basis for predicting post-test scores for each student in the sample, based upon his pre-test score on an alternative form of the same test.

A chief focus of this study was the pupil gains in the areas of silent (California) and oral (Gilmore) reading. It was decided for a number of reasons that simple pre-test vs. post-test gain scores would be less desirable than a difference score taken as a difference between end of treatment predicted score and actual end of treatment score. Thus, in each of the sub-tests for silent and oral reading, regression equations were obtained using as the predictor variables the pre-test scores of the sub-test. Using this method, a post-test score was predicted for each subject on each of the silent and oral subtests. This score was then subtracted from the actual score giving us a regressed gain score for each subject.

The experimental and control group regressed gain scores for each sub-test were then compared by means of the _t_ technique.

At the beginning of the study the _Parental Attitude Research Instrument_ (PARI) was administered to the mothers of the children in the study. This test yielded three factor scores for each of the mothers: Factor I--Approval of maternal control of the child; Factor II--Approval of expressions of hostility; Factor III--Approval of positive attitudes toward childrearing. As part of the data analysis, correlations were obtained between each of the subjects' regressed gain scores on each of the silent and oral sub-tests and the mothers' scores on each of the three PARI factors.

Analysis of Pre-Test and Post-Test Correlations

In the examination of the pre-/post- correlations two things are of interest. First, the magnitude of the correlation. Secondly, the scatter plot of scores showing the relationship of individual scores in relation to the regression line. Scatter plots are included in Appendix A.

The correlations between the pre- and post- administration of the _California Reading Test_ are shown in Table 6. The correlations for the _California Reading Test_ are all of high positive magnitude.

An examination of the scatter plots for each correlation was also included. The point of interest to us in this examination was to see the position of the experimental and control scores with the regression line. (See Appendix A.)

The scatter plot of the _Reading Vocabulary_ subtest of the _California_

TABLE 6

CORRELATION BETWEEN SEPTEMBER AND JANUARY SCORES OF ALTERNATE FORMS OF CALIFORNIA READING TEST N = 29

Sub-Test	r
Reading Vocabulary	.89
Reading Comprehension	.88
Total Reading	.91

Reading Test shows that the scores are quite evenly distributed in relation to the regression line. In the experimental group four scores are above the line, two on the line and seven below the line. In the control group four scores are above the line, five on the line, and seven below the line. Thus, the predictions as to post-test performance are about evenly distributed between experimental and control groups.

The scatter plot for the Reading Comprehension subtest of the California Reading Test shows the same relationship for the experimental groups as was found in the Reading Vocabulary: four scores above the regression line, two on the line and seven below the line. Control group scores placed seven above the line, two on the line, and seven below the line. Again this shows us that our predictions would be about evenly spaced, some over predictions and some under predictions. The tendency would be to slightly over-predict post-test scores for the experimental group. The tendency would be to conclude that the treatment has slightly less effect on the Reading Comprehension (silent) than might have been expected.

The scatter plot for the Total Reading shows that for both the experimental and control groups the scores tend to cluster very closely to the regression line. There would perhaps be a slight tendency to under-predict scores for both the experimental and control groups on the post-test Total Reading score. Thus, we might conclude that the treatment has been slightly more effective than we might have expected, as reflected in the students' Total Reading score.

The correlation for the pre- and post-administrations of the Gilmore Oral Reading Test are shown in Table 7.

TABLE 7

CORRELATION BETWEEN SPETEMBER AND JANUARY SCORES ON ALTERNATE FORMS OF THE GILMORE ORAL READING TEST N = 29

Sub-Test	r
Accuracy	.72
Comprehension	.25
Rate	.67

The scatter plot of scores for the Gilmore Accuracy score are of interest. Eleven of the 13 experimental student scores fell above the regression line and two were below the line. Thus, we would tend to under predict post-test accuracy scores for the experimental group, meaning that the treatment had a positive effect on the experimental group, increasing their post-test Accuracy scores to a greater extent than we might have predicted on the basis of pre-test-post-test correlations for the total sample of experimentals and controls together. The scores for the control students, however, show a slight tendency for over prediction indicating that the treatment was slightly less effective for them than we would have predicted. Six student scores are above the regression line and 10 are below the line for the control group.

In examining the scatter plot for the Gilmore Comprehension scores we find a low correlation (r = .25) and the expected resulting wide scatter of scores. It is still of interest for us to examine the relationship of the student scores for the experimental and control groups with the regression line. We find that nine of the experimental student scores fell above the regression line, one on the line and three below the line. Our conclusion would be that a predicted post-test score would most likely be less than an individual's obtained post-test score. The treatment was apparently more effective for the experimental students than we might have predicted. The control student's scores show a different picture. Three of the control scores are above the regression line and 13 below the line. Thus, we would conclude that the treatment appears to have had less effect upon raising the control student post-test scores than the experimental student scores.

The scatter plot for the Gilmore Rate shows that seven of the experimental student post-test scores fell above the regression line, three on the line and three below the line. This would indicate slightly better than predicted post-test scores for about half of the experimental group. In other words, the treatment was apparently successful in producing higher post-test scores for half of this group. Four student scores for the control group fell above the regression line, one on the line, and eleven below the line. This would lead us to conclude that the treatment was less effective for the control group on oral Rate than might have been predicted or in comparison to the control group.

Analysis of Regressed Gain Scores

Regressed gain scores were computed for each student on each of the test subscores. These regressed gain scores served as the measure of gain as a result of the treatment and were compared for the experimental vs. control students on each subscore by means of the t technique.

The t analysis for the experimental and control on the California Reading Test results are as follows:

	t	Significance	w^2
Reading Vocabulary	-.04	n.s.	.00
Reading Comprehension	-1.81	$p > .10$	.10
Total Reading	1.41	n.s.	.05

The difference between the regressed gain scores for the experimental and control groups in the Reading Vocabulary and Total Reading scores on the California Reading Test are not significant. The difference between the regressed gain scores for the experimental and control groups on the Reading Comprehension score is significant at the .10 level. The t (-1.81) also tells the direction of the significance, in this case, that the control group regressed gains are significantly greater than the experimental group on the Reading Comprehension (silent) subtest.

The t analysis for the experimental and control groups on the Gilmore Oral Reading Test are as follows:

	t	Significance	W^2
Accuracy	2.16	$p > .05$	.16
Comprehension	2.76	$p > .02$	.25
Rate	1.95	$p > .10$	.12

The differences between the regressed gain scores for the experimental and control groups on the Gilmore Oral Reading Test subscores are all significant. The results indicate that the experimental group scores are significantly greater than the control group scores. The level of significance for each of the subtests is different.

The results of the *t* analysis of the regressed gain scores for the experimental and control groups would enable us to conclude the following:

1. The treatment program apparently had little effect on the gains of the Reading Vocabulary and Total Reading subscores of the California Reading Test (silent reading).

2. There was a significant difference (.10 level) between the experimental and control groups on the California Reading subtest, Reading Comprehension; however, this difference indicated control group gains to be greater than experimental group gains.

3. The treatment program apparently had a significant positive effect on the three subscores of the Gilmore Oral Reading Test. Although the levels of significance are different for each of the three subscores, they are all in the same direction in this analysis indicating experimental group gains were greater than control group gains.

4. Apparently the treatment program was more effective in increasing oral reading gains than silent reading gains.

The W^2 column in the two tables above tell us the percent of variance on the respective reading achievement measures accounted for by the experimental treatments. The formula used ($\frac{t^2 - 1}{t^2 + N_1 + N_2 - 1}$) is from Hays, W. L., Statistics for Psychologists, Holt, Rinehart and Winston, 1965, pp. 327-328. Both oral reading accuracy and comprehension measures reflect significant treatment differences favoring the experimental group and a substantial amount of variance is accounted for by the treatment. Silent reading measures reflect only one significant treatment difference and that favoring the control group but a rather low degree of association between the treatment and the dependent variables. In summary, we have found the experimental treatment (parent training) to have an impressive effect on oral reading gains; thus, making a follow-up of this finding a promising venture.

Analysis of Mother's PARI Scores and Correlations With Children's Regressed Gain Scores

The correlation between the mother's Parental Attitude Research Instrument (PARI) factor scores and children's regressed gain scores did not reveal many significant correlations (see Table 8). There were 18 correlations of which two were significant. The California Reading Test, Reading Comprehension correlated significantly (.025 level) with

TABLE 8

CORRELATION BETWEEN MOTHER'S PARI SCORES AND CHILDREN'S REGRESSED GAIN SCORES N = 26

	PARI Factor		
	I	II	III
California Vocabulary	.15	.10	.12
California Comprehension	.07	.14	.42**
California Total	.29	.15	.31
Gilmore Accuracy	.15	.10	.10
Gilmore Comprehension	.16	.21	.06
Gilmore Rate	.12	.23	.32*

*Significant at .05 level (.317 required, one-tailed)

**Significant at .025 level (.374 required, one-tailed)

PARI Factors:

I. Approval of maternal control of the child.

II. Approval of expressions of hostility.

III. Approval of positive attitudes toward childrearing.

PARI Factor III, "approval of positive attitudes toward child rearing." The Gilmore Oral Reading Test subscore Rate correlated significantly with the PARI Factor III. The California Total Reading subscore correlations with PARI Factor I (approval of maternal control of the child) and Factor III, were .29 and .31 respectively. A correlation of .317 is needed for significance at the .05 level. These correlations would tend to indicate that a supportive understanding mother who encourages verbalization by the child is related to gains in silent reading comprehension and oral reading rate. We would have some justification for saying that the same relationship exists between the mothers and the California Total Reading score since the correlation so closely approached significance (.05 level).

Tables 9 and 10 show the correlations between the mother's PARI factor scores and the children's regressed gain scores, when broken down as to experimental and control groups. These correlations would tend to indicate that we cannot accept our general hypothesis that mother's attitudes as measured by the PARI Factors I, II, and III are significantly correlated with oral and silent reading gains. However, we have support for the more specific statement that mother's attitudes as measured by PARI factors tend to be significantly correlated with specific oral and silent reading gains. The indication is that the attitudes of support, understanding, and encouraging verbalization of the child by the mother, are related to these reading gains of the children.

TABLE 9

CORRELATION BETWEEN MOTHER'S PARI SCORES AND CHILDREN'S REGRESSED GAIN SCORES FOR THE CONTROL GROUP N = 15

	PARI Factors I	II	III
California Vocabulary	.17	.29	.08
California Comprehension	.18	.06	.42*
California Total	.42*	.26	.49**
Gilmore Accuracy	.17	.02	.35
Gilmore Comprehension	.04	.10	.28
Gilmore Rate	.02	.41	.30

*Significant at .05 level (.412 required, one-tailed.)

**Significant at .025 level (.482 required, one-tailed.)

TABLE 10

CORRELATION BETWEEN MOTHER'S PARI SCORES AND CHILDREN'S REGRESSED GAIN SCORES FOR THE EXPERIMENTAL GROUP N = 11

	PARI FACTORS I	II	III
California Vocabulary	.47	.08	.16
California Comprehension	.39	.29	.38
California Total	.13	.42	.24
Gilmore Accuracy	.04	.25	.72***
Gilmore Comprehension	.52*	.18	.27
Gilmore Rate	.24	.30	.34

*Significant at .05 level (.476 required, one-tailed.)

***Significant at .01 level (.684 required, one-tailed.)

Teacher Report

There is some evidence that the effectiveness of the training program was in part due to greater parental interest and more regular work on the part of their children. The remedial teacher reported that six children requested material to be sent home regularly for parents to hear them read. All six were experimentals. Nine children did not report regularly on home reading or had to be reminded week after week to bring their reading slips in. All nine were controls. In six out of seven cases where brothers or sisters or cousins of remedial students voluntarily went to the remedial teacher for help, the children were experimentals. The average regressed gain on oral reading comprehension for the six experimentals requesting home material was +1.3 compared with an average regressed gain of a -.5 for the nine controls who did not report regularly on home reading.

Parents made many positive remarks to the remedial teacher after the program was over concerning their appreciation. Of more interest were the negative comments made by some parents. The remedial teacher had post-experimental interviews with most parents. The major negative reactions are illustrated by the following excerpts:

"They used such hard words. I guess I'll have to get used to it."

"What is this negative and positive stuff? I'm positive. When I say 'Do this,' those kids jump. I haven't got time for such foolishness."

"I have no time. I have Scouts on Monday, Church on Tuesday, overtime on Wednesday, and bowling on Friday. Saturday I work half-a-day. Sunday we go to church. I have no time to help the boy."

In spite of attempts to be nontechnical and shifting of methods when it appeared advisable, early sessions discouraged some parents because of the jargon.

CHAPTER V

THE PARENT TRAINING PROGRAM

Gabriel Della-Piana
John E. Allen

Schedule and Structure

The parent training program continued for fourteen formal sessions starting September 15, 1965, and including September 22, 29, October 6, 13, 20, 27, November 3, 10, 17, 24, and December 1, 8, 15. Individual sessions were held with each parent twice during the period September 15 to December 15.

Between December 15 and the beginning of pupil post-testing (January 28) individual appointments in parents' homes and at the University dealt with discussion of their progress and problems in applying contingency management techniques to their children.

Parental pressure for child's schooling enters our training program rather directly. We begin with the assumption that if a parent does not like the child's behavior, the parent needs to behave differently. Thus, one of the first steps in our training program requires the parent to identify child behavior to be accelerated or decelerated. Since we are working with parents of children with reading disability, school behavior is typically on the list. However, we make no attempt to exclude other types of behavior since the general parent-child interaction pattern is of importance for school learning.

The number of cultural activities provided for the child and the child's participation in mealtime conversations enter our training program initially through exercises requiring the parent to record conversations with the child at mealtime, during a child's study activity, in social activities outside the home, and in other settings. These reports often become the focus for devising activities for the parent to try out.

Parental warmth and disapproval enter our training program through the obvious medium of specific parent behavior we attempt to modify in training. It may seem unusual that parents of the higher achievers give more help and warmth as well as withhold more help and show more disapproval. It is, of course, possible that the techniques of giving disapproval and withholding help work best for parents who give much to their children. That is, a child who is given much by a parent may well want to conform to the parent's wishes or care what the parent thinks if there is a threatened loss of approval.

In brief, our training program involved the following:

1. Teach parents a language for talking about the nature and effects of punishment and five alternatives to punishment. The five alternatives include: Removing the discriminative stimulus, eliciting an incompatible response, allowing time to pass, extinction, and getting a response under the control of a different stimulus or shaping up a new behavior.

2. The parent observes a child's behavior to be changed (accelerated or decelerated), gets a base rate for the behavior and describes in detail what happened and the circumstances or stimulus conditions under which the behavior occurred.

3. The parent learns to identify what is reinforcing for his child. That is, the parent through direct observation and interview makes a list of activities which are reinforcing for the child and puts

these in a hierarchy according to response probability.

4. The parent identifies the behaviors to be changed including those deriving from step "2" above plus those deriving from an analysis of the child's reading ability reported to the parent.

5. The parent tries punishment and/or any of the five alternatives to punishment that seem appropriate. Constant contact is maintained with the training staff. Some of the parent attempts at using new techniques are worked out in the home and some in our laboratory.

The program undergoes frequent revisions on the basis of tryouts. Three examples of how the program was revised are presented here in concluding our discussion of the parent training program.

1. In the initial pre-experimental versions of the training program we worked with parents who were paying fees for diagnostic and remedial work on their children. With these highly motivated parents attendance was no problem. However, when we conducted the training program with a random selection of parents of children with reading disability, we had to change our procedures to maintain attendance. Thus, we had to provide transportation for some parents and for others we had to modify the highly academic training program to maintain interest and attendance. Much of the program that communicated effectively in written format had to be changed for parents who were poor readers. Technical terminology was supplanted by nontechnical language.

2. We also learned from early versions of our program that it was not very easy for parents to reinforce new behaviors in a child because the parents often chose neutral stimuli which were not reinforcing. Thus, we developed exercises for identifying reinforcers based on the work of Ligon (1959) and Premack (1965). One parent applied these techniques

in a creative way. She noticed that her daughter would do almost anything to avoid being late to school (e.g., skip breakfast, run to school, ask for a ride, trade chores, etc.). Thus, when the parent made 'getting to go to school on time' contingent on having homework completed, the daughter got her homework completed earlier. In training parents to identify and use reinforcers we have found it more effective to teach them general principles rather than specific techniques. Because behavior is complex, a specific technique may fail to work in a given situation, but a knowledge of principles allows the parent to figure out why and to devise alternative techniques.

3. One problem that came to our attention early in the development of a training program was the practical problem of changing a parent's behavior when a strong previously developed competing response was interfering. In one case a mother had a tendency to give the child a big lecture when the child erred on a word. Thus, if the child said "place" for "palace," the parent might say "Now Michael I told you that before. You left part of the word out. Now sound it out slowly . . ." In this particular case the child quit listening to the parent and "tuned in" again after the long lecture. The mother did not respond to our suggestions for her behavior change but expressed a desire to change. Parent and child were brought into our laboratory and placed in a room with a one-way viewing screen. The parent (mother) wore an earphone allowing the trainer to communicate with her. If the parent began a lecture when her child read place/palace, the trainer said (over the earphone) "Palace, m-hm," signifying to the parent that she should stop her lecture and say "palace, m-hm." The parent's lectures diminished rapidly in length as a result of such practice.

In each session with parents whether individually or in a group, there were seven major objectives of the training program.

1. Encourage parent goal setting of specific things to accomplish with respect to themselves and their children.
2. Relate new concepts to their own background of experience with as many common associations as possible.
3. Provide knowledge of their own progress and progress of their children at home and school.
4. Offer personal warmth and support to parents.
5. Establish identification of parents with a new reference group "acquainted with some special terminology, successful in specific skills, in a winning operation, etc."
6. Develop skills in behavioral analysis and management through discussion of their own cases and selected training cases and role playing.
7. Develop awareness of own behavior so they can see how competing habits of their own are being reinforced.

Outline of the Program

September 15.--Administer PARI, demonstrate objective descriptive recording of conversations and provide practice in descriptive recording.

The remaining sessions included discussion of parents' own cases, role playing by at least part of the group and a nontechnical discussion of the principles and terminology outlined below in technical jargon. Films were shown on reinforcement, extinction, schedules of reinforcement, stimulus discrimination, and shaping.

September 22 and 29 and October 6.--

A. Definitions of Reinforcement and Punishment.

1. Positive Reinforcer: Anything that occurs after you do something that makes you do it more often in the future. Negative Reinforcer: Anything which, when terminated after you do something, makes you do it more often.
2. Type 1 Punishment: Presenting negative reinforcers. Judging, scolding, threatening, physical harm.
3. Type 2 Punishment: Withholding positive reinforcers. Taking away objects, privileges.

B. Problems in Application.

1. Procedures for identifying reinforcers are often time consuming.
2. Temporary effects. Works while threat is present.
3. Requires control over situation or doesn't work.
4. Side effects. Lasting avoidance effects except under certain circumstances.

October 13 and 20.--

A. Definition of Extinction.

1. Withholding reinforcement for behavior you want to eliminate. That is, to extinguish behavior you cause it to occur but don't reinforce it. Techniques include: ignoring, not giving material reinforcer, mirroring or 'accepting.'

B. Problems in Application.

1. Child may interpret it as punishment.
2. Requires knowing what is reinforcing the child.
3. Often requires considerable time or otherwise not practical.
4. Lack of immediate results elicits ineffective behavior in parent, including circular mutual reinforcement or punishment.

5. Probably works best when coupled with techniques for shaping up new habits to substitute for the undesired ones.

October 27.--

A. Definition of "Temporary Removal of the S^D."

1. An S^D or discriminative stimulus is whatever part of the situation is controlling the child's behavior.

2. Eliminating the S^D is simply removing that part of the situation that is "controlling" or causing the behavior. Techniques include taking child away from S^D of S^D away from child by actual physical movement or by "talk" that causes the child to see the situation differently. Such techniques may include mirroring, supporting, or interpreting.

B. Problems in Application.

1. Child may see it as punishment.

2. Requires knowing the S^D.

3. Impractical when child must stay in the situation.

4. Sometimes useful as a temporary measure: if child won't face situation again or, coupled with more lasting techniques, when child needs to learn to get his behavior under control of some other S^D in this type of situation or needs to get different behavior tied to this S^D.

November 3.--

A. Definition of "Long Term Removal of the S^D."

1. Remove the child for a long interval of time from the total situation which is controlling an undesired response where intense emotion is involved or the situational demands make it impossible to work with the child in such conditions.

B. Problems in Application.

1. The child may see it as punishment or may learn a difficult-to-extinguish avoidance reaction.
2. Requires knowing what the "situation" is. The critical controlling part of the situation may be a small part of the total.
3. Impractical under some conditions.
4. Sometimes useful when the problem is likely to dissolve with time due to developmental changes (mental, emotional or social) or when the problem need not be solved now or when the principal people involved may change or when a physiological cycle is involved.

C. Report to Parents on Their Own Children.

1. Outline of diagnostic reading test results.
2. Discussion of specific behaviors parents should work on and procedures to try out.
3. Individual sessions this week and next to clarify, get feedback and redirect parent home-teaching.

November 10 and 7.--

A. Definition of "Eliciting an Incompatible Response."

1. This technique involves simply bringing out a response from the child that interferes with or inhibits a response you want to eliminate. Devices used may include questions, explaining, directing, distracting, joking, etc. to focus attention elsewhere or to elicit a response incompatible with the objectionable one.

B. Problems in Application.

1. Requires knowing the eliciting stimulus; what is a joke for this child? What will catch his attention?
2. Sometimes the undesirable response is an intense emotion not susceptible to distraction or interference.
3. Often works as a temporary device where problem is temporary or as a preparatory technique to more permanent methods.

November 24 and December 1.--

A. Definition of "Shaping Up New Behaviors."

   1. Shaping is gradually and differentially reinforcing successive approximations to the desired response. It involves the following elements.
      a. Select or develop a positive or negative reinforcer.
      b. Decide on the final behavior wanted.
      c. Determine the child's present readiness for this behavior in terms of attitude, knowledge and skills.
      d. Break down the task into achievable steps.
      e. Prompt the response sufficiently so the child can take the first step and reinforce for "desired" while withholding reinforcement for "undesired" behavior.
      f. Give help for taking the second step and differentially reinforce.
      g. Fade away unnecessary prompts and provide discrimination training until the response is made under the stimulus conditions you want to control the behavior.

B. Problems in Application.

   1. Requires knowing what reinforces a child or how to find or develop a reinforcer.

2. Requires ability to set realistic goals.
3. Requires knowing how to assess readiness and willingness to experiment with different sizes and kinds of steps until an "achievable" one is found.
4. Requires ingenuity in finding "prompts."

December 8.--

Self analysis to identify own "reinforcers."

Implications for breaking "mutual reinforcement binds."

December 15.--

Complex cases. Multiple techniques.

Sample Case Report

For each child a case report was made that became a guide for the remedial teacher and for work with parents. The remedial reading teacher had access to diagnostic data on both experimental and control cases. The experimenters made up their own report which was not given to the parents but was used as a guide to developing recommendations for them. Although most diagnostic testing was completed early in the school year, it was not until November 3 that parents received reports and recommendations for treatment. Not all cases were formally written up as the one below, but the data was in a folder available for the experimenter's use.

Name: Norinne   Date of Report: 9/8/65
School: Grade: 6   Birthdate: 7/9/54
Address: Chronological Age: 11-2
Parents' Names: Report By: G. Della-Piana

I. Background.

Norinne is the third in a family of six children: B. 16,

G. 13, Norinne 11, G. 10, G. 6, B. 3. She reads to the little children every night. Roller skates, plays volley ball, is good in sports but doesn't like dancing. Likes instrumental music, 'Munsters,' 'Bewitched,' 'Family in Space,' 'Red Skelton.' The whole family goes roller skating or to a movie once in awhile. Norinne does chores willingly when it's her turn, always liked school and is liked by teachers. Younger sister (10) depends on Norinne who has always taken care of her even when they slept in the same crib together. Many books in the home. Norinne feels she is Dad's favorite, as do others Mother is trying harder to "listen" this year. "You can't just say yes or no until you know what it is they are doing." One child (g. 13) wanted to go out at 8:00 p.m. "I said 'Do you think you should?' She said 'I can if I want to.' Then she decided against it because she already had refreshments. A friend on the phone tried to get her to go out for refreshments." Father says mother shouts at children to get them to do things.

School records indicate normal vision (20/20 Snellen) and normal hearing, slight speech difficulty, average grade D last year, cooperative child but not greatly concerned--placid. Teacher sees her as needing several explanations for written work, shy withdrawn, worrying about family problems, overly sensitive to teasing, easily discouraged by criticism or failure and daydreaming. Also, she is seen as a slow worker needing urging to stay with a task, and a nail biter.

Norinne expressed concern for her mother's illness. Says it scares brother. In a sentence completion test the major feeling expressed was a desire to tend little brother, a fear and dislike of school and some teachers and a wish that mother would get well. Norinne says she likes comics, funny books and comedy movies, and wishes people wouldn't yell. She loves tether ball, helps with house chores, is a girl scout, finds homework hard, has been to many places (circus, zoo, art museum, farm concert, swimming pool, car and bus ride). Best movie: Oklahoma. Best actor: Tony Curtis. Does not like to read; likes art best arithmetic least. No library card.

II. Reading Potential.

November, 1963, Stanford Binet, I Q. 92.

September 8, 1965, Peabody Picture Vocabulary Test, Form A:

C.A. 11-2, M.A. 10-4, I.Q. 95.

California Mental Maturity, 1963 S-Form (9/10/65):

C.A. 11-2

Language I.Q. 77, M.A. 8-7

Non-Language I.Q. 92, M.A. 10-5

Total I.Q. 82, M.A. 9-2

There is considerable consistency among the various measures. Taking the Peabody as the best estimate, on the basis of mental age Norinne's reading potential is grade 5.4, and on the basis of the I.Q. it is about 5.8. Thus, she may be expected to perform at slightly below average for her grade.

III. Reading Achievement: Level.

Gilmore Oral Reading, Form A, 9/14/65:

Accuracy 3.4

Comprehension 4.5

Rate 84 (slow for grade)

Durrell Sullivan Intermediate A

Word Recognition 3.6

Paragraph Comprehension 3.5

Total 3.6

California Reading Test Elementary 1963-X (9/10/65)

Vocabulary 3.8

Comprehension 3.1

Total 3.5

Norinne is reading about two years below her potential in both oral and silent reading. The higher comprehension than accuracy in oral reading is probably the only significant discrepancy in an otherwise flat profile. The causes of the slow oral reading rate and comparatively poorer oral word recognition than comprehension will be sought in an analysis of specific errors in the next section. At this point the following hunches appear: Norinne is careless in reading; i.e., she can read better but is not attentive anymore than necessary to get the general meaning when being watched (thus, her higher oral reading comprehension than oral reading accuracy or silent reading comprehension). She probably skips more material in silent reading. Also, she probably has some weaknesses in higher level word analysis skills but uses context well when forced to (oral reading, not silent) and when she knows enough words in the material to make it possible. Yet there is probably some other lack in her ability to use context or her silent reading would be much higher than oral.

IV. Reading Achievement: Analytic Diagnosis.

Norinne's oral reading is characterized by a variety of error types including ignoring punctuation, omissions, substitutions, refusals, and reading in monotone and soft volume. Examples of omission errors: does(n't), room(s). Many words were attempted but not completed without help: po(sition); even(ings), as(sists), gen(eral). Substitutions include: was for waves, brings for begins, and fifty for forty. Many errors seem due to lack of attention: had for has (but correct elsewhere), he's for his (but correct elsewhere). Thus, the cause of oral reading accuracy being lower than comprehension appears to lie in "careless" reading (lack of attention? motivation? confidence?) and in some lack of intermediate level word analysis skills such as syllabication and use of context (context reader usually has a much higher silent than oral reading level).

The Durrell Analysis of Reading Difficulty was administered to check on the extent to which oral reading accuracy was a function of poor word recognition. Results: Oral reading 3.2 (excellent comprehension), untimed word analysis 4.3. Thus, the results were consistent with the Gilmore findings and show oral reading in context lower than oral reading of isolated words. Also word recognition difficulties (on isolated words) were primarily not trying, trying and getting the first syllable or missing the middle of a word when pressed to try something (e.g., chatter for chapter). Specific errors: signal for single, single for shingle, boardcast for broadcast, refusals of quarter and guard. Oral reading in context was highly loaded with poor phrasing and repetitions that appeared due to insecurity and trying to figure out other words. Yet the high anxiety and poor high level word analysis skills make use of context inadequate as a help to word recognition.

V. Summary of Diagnosis.

1. Norinne is a shy, anxious sixth grader with slightly below average ability who may be expected to perform at about the average level in reading for her grade.

2. Her oral and silent reading skills are generally about two years below her estimated potential.

3. The only discrepancy in her otherwise flat profile of reading skills appears to be a high point in oral reading comprehension. This discrepancy may be due in part to lack of confidence or emotional distraction causing many word recognition errors in oral reading and lapses of attention in silent reading. Also, it may be due to some lack in higher level word analysis skills, particularly context reading and syllabication.

4. Specific oral reading difficulties covered a variety of error types including ignoring punctuation, omissions (e.g., was for wares, brings for begins) and refusals or attempts at the first syllable and giving up (e.g., po for position, even for evenings, as for assists, and gen for general). Also, several words were missed in one place and correct in another (e.g., has and his). Finally, oral reading was in a monotone and soft volume.

5. Norinne's reading and viewing interests appear to lie in comedy, preferred activities are in art and tether ball and concern is expressed over mother's health.

V. Recommendations for School and Home.

1. Independent reading should be with books that interest Norinne at about a third or middle third grade reading level.

Examples of such books are: Gulliver's Stories, Garrard Publishing Co., Champaign, Ill.; P. Travers Mary Poppins, Harcourt, Brace and World; P. R. Fenner Gigglebox, Knopf (15 funny stories); M. E. Mason Happy Jack, Macmillan (mischievous runaway mule); LeGrand Henderson Why Cowboys Sing in Texas (how Slim Jim taught cowboys to sing), Abingdon, Nashville.

2. Word analysis practice should focus on syllabication and use of context. Sources of exercises on these skills are: "Phonics Skill Text," Book B, recognizing compound words, pp. 19, 25, 27, 35, 43, 47, 62; "Eye and Ear Fun," Book 3, syllabication, pp. 32-37, 53, 56, 58, 64; "Uncle Funny Bunny," Book 3, dividing words into syllables, pp. 21, 25, 39, 55, 65, 73, 75; "Phonics We Use," Lyons and Carnahan, starting with Book D; Sarah I. Roody, Clues in Context, Clearing House 27, 1953, 478-480. (Classifies context clues into types such as synonyms, descriptions, examples, use of own knowledge, atmosphere or tone of passage, presences of familiar word within an unfamiliar one, gives methods for teaching.)

3. In the present case parents may be taught by the reading specialist or counselor to support school instruction focussed on shaping up "attentive, accurate, expressive reading" and "use of syllabication and context in word analysis" by the following procedures.

a. Cause sitting with book in hand to become the occasion for high level reading habits. Keep periods short and reinforce with TV programs of child's choice. Require some reading each day (since she apparently responds to parental requests). When she seems to be daydreaming, get her away from the book into something else so that "book holding" is never the occasion for non-productive behavior that is reinforced.

b. Build syllabication and context reading skills by listening to the child read. Usually have her read orally to you something she has already read silently. If she misses a word, tell her the correct pronunciation. Occasionally break the word up yourself and put it together (po-si-tion, position) then after a few days of this delay putting them together to see if the child does. If she doesn't, you do it.

c. Help Norinne get rid of over-concern about family problems or self by letting her talk when she is concerned, calmly accepting her feelings and thoughts and (when she is ready) find something satisfying for her to do immediately after.

d. Be sure to invite parents to come back or call if problems arise which concern them.

VI. Follow-Up.

Five months after initial testing, on Form B of the Gilmore, Norinne scored at a 5.1 grade equivalent in oral reading accuracy and an 8.5 in oral reading comprehension, with rate only slightly improved. On an alternate form of the California Reading Test she scored 6.0 on vocabulary and 5.5 on comprehension. These were dramatic gains but there was, of course, still room for improvement.

VII. Examples of Training Program Involvement.

To give the reader a picture of how one family became involved in the training program, the case of Norinne is followed a bit further.

A. Description of changeworthy behavior.--Each parent was asked to describe some behavior which they would like to change in the child. The behavior could be something they wanted to increase in frequency or decrease in frequency. Also, it could be school related behavior or any other behavior.

Norinne's father submitted the following: Mrs. I. tries to get the kids to do things by shouting at them. She should realize by now that it doesn't work but she keeps trying. It has even reached a point sometimes of her threatening the kids by asking them "Do I have to holler at you again?" I have told her it doesn't do any good to shout all the time and she answers "that the only way I can get anyone to listen to me." I can usually get the kids to do things for me by asking them or by quietly telling them to do it.

Norinne's mother submitted the following: Here is an example of how things go: "Norinne why don't you get dressed right after you get up in the morning?" (No answer.) One-half hour later; "Norinne and Carol are you ready for breakfast?" (No answer, so I looked in and found both sitting in bed with PJ.^{s}. So I told them to wash and go to school after breakfast without getting dressed for a change. Norinne told me she wasn't going to school. I was pleased that she spoke for herself. This evening I asked her to clear the table for Carol. The three girls take turns doing the dishes. She said, "Gad, I always do that." But she did that without saying anymore. She really don't say too much.

B. Description of dinner table conversation.--

Father: How are you doing at school?

Norinne: Fine.

Father: How are you doing in reading?

Norinne: I'm doing better than last year.

Father adds: "We don't talk much. Norinne and I have a very nice relationship; we are very close to each other but still we are not very communicative.

C. A five-day log made by mother on Norinne.--

Thursday	Friday	Saturday	Sunday	Monday
7:30 was on traffic duty; played for awhile; 7:45 dressed & washed; 8:00 wrote on blackboard.	7:45 dressed & washed; 8:00 talked while eat breakfast about school.	7:30 watch TV & played with Jimmy.	8:45 dressed & wash in 5 min. for a change; went with Dad & Jim to get leaves.	7:45 dressed & wash & played for while 8:15 talked with family.
8:15 breakfast 8:35 went to school & traffic duty.	8:35 went to traffic duty & school.	9:00 ate breakfast 9:30 watch another cartoon.	9:00 breakfast 9:30 help Dad outside; she loves to do this.	8:50 went to school.
12:10 home for lunch (we talk about school & family during meals) 12:35 went to school.	12:10 home for lunch played hangman while eating; 12:35 back to school.	10:00 they clean bedroom & help me with house work; 11:30 went to park with lunch with family.	12:00 help fix dinner & ate. 12:45 everybody leaves for a ride.	12:10 lunch played guessing game while eating; 12:45 went back to school.
4:10 came home (but usually comes home at 3:35) she loves to help one of the teachers after school	4:00 stay & help teacher 4:15 went out & play 4:45 went to doctor	5:00 home from park; watch TV cartoons; 6:00 supper & told us what they did at park	5:00 supper; 6:30 stayed home with Jimmy while the rest goes to church; so she watched TV	3:45 home from school; change clothes. 4:00 went to girl friends 5:00 supper; 5:45 homework

Thursday	Friday	Saturday	Sunday	Monday
lets me know when she's doing this. 4:55 went to store with me. 6:00 supper 6:35 homework & read to Shirley & Jimmy & do supper dishes	for shot; 5:30 went to neighbors to play with baby. 6:15 supper ate in living room to watch 'Flintstones.' 7:00 homework	6:30 watch TV 'Lost in Space.'	'Voyage to the Bottom of the Sea.'	7:00 do supper dishes & played
8:00 watch 'Bewitched' on TV. 8:35 went to bed (goes to bed earlier than the other children & she's up earlier then too)	7:30 watch 'Addams Family' 8:00 read to the two little ones 8:30 did some coloring & played Jack stones with older sisters	8:00 went to bed.	7:30 read to Jimmy & put him to bed; 8:00 finished homework from Friday; we discuss her homework & went to bed at 9:00.	8:00 watch the 'Munsters;' in bed by 8:40; we take Wed. nights to do homework & other reading & spelling so no TV or play, hangman or games.
	10:30 watched nightmare; got too sleepy went to bed at 10:45.			

D. Home visits.--We made several visits to Norinne's home as with all experimental children. The visits served two major purposes in this case.

In the course of discussion Norinne's parents mentioned another family in the experimental group. The child had an operation and was required to wear a cast that kept him home. They wanted to do something for the child, so they gave him some goldfish to watch. This kind of concern for others in the group was quite common and showed itself in offering rides and offering emotional support during the class sessions.

A feeling of confidence and identity with the group was established in such encounters. Each person had some uniqueness for which we showed appreciation and recognition. Norinne's mother made some Eskimo Yo Yos and slippers and a coat and showed these to us. Thus, instead of being "a parent of a child with a reading problem" each parent was recognized in his own right and glory.

Another value of the home visit centered around helping them to implement the principles that were discussed in class. Of course we had quite a bit to go on in these home sessions. Discussion centered around parent descriptions of changeworthy child behavior, descriptions of dinner table conversations, the five-day log of the child's activities, and the child's reading performance on the various tests administered. The specific recommendations for parents listed in Section V above were followed up in these home visits. For example, in carrying out the suggested recommendations Norinne's parents had considerable success but noted that a major problem was the "soft volume" in Norinne's oral reading. This difficulty was noted by the child's teachers as well as the parents. Since it was of concern to both teacher and parent, suggestions were made for increasing the volume of Norinne's vocalizations. On a follow-up visit parents reported lack of success. At that time the experimenter directed parents to have Norinne prepare some material to read to the experimenter. On a final visit the experimenter listened to Norinne and showed more approval for louder more fluent reading than for the softer

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The mother's ineffectiveness in getting the children to respond to her requests was also discussed in home visits. With parent permission the family agreed to support each other in changing this circumstance. Thus, children responded more immediately to mother when she spoke in a normal tone than when she raised her voice. Also, the mother followed through on her "commands" by not repeating them many times but simply going after the child and"walking them through the required task" after the first request.

Home visits gave the experimenters insight into conditions that were incompatible with homework or conditions that were potentially quite powerful. Parent interaction patterns, TV watching, parental neglect and other conditions were observed and provided the basis for parent instruction in the general class setting as well as in home visits.

After home visits parents were more responsive in bringing in reports of child behavior. For example, after emphasizing to Norinne's mother the importance of working with Norinne a few minutes a day, and demonstrating what to do, she brought to class brief descriptions of her work as follows:

> Did her spelling today. Had to find out what each word meant. I find it good practice for both of us. Fussed a little cause she had to do the supper dishes, but I only asked her once.
>
> She seems to be grasping more of the meaning of words today. She enjoys the few minutes we spend together.

> She comes to me more now about things and words she don't understand.

Thus, home visits provided an opportunity for the experimenter to see the situation more clearly, conduct demonstration of techniques and check on the validity of parental "rationalizations" for the difficulty of implementing suggestions. On the last count, for example, one mother with nine children argued she was too busy to supervise her child's reading even for 5 minutes a night. On the evening of the experimenter's visit (by appointment) the entire family was watching TV. It was easy after that to get at least 5 minutes a day from this mother in which she listened to her child read.

D. School Visits.--The experimenter visited all experimental and control children in their school remedial reading class. He did not make recommendations to the remedial teacher but simply observed the children. The school visits by the experimenter appeared to have an impact on experimental parents by demonstrating an interest in their children. As reported in the experimental results, Experimental children (on urging from parents) requested more reading material to be sent home and did more home work on such material. When experimental parents visited the school, they had specific purposes in mind because of class and private discussions with the experimenter.

CHAPTER VI

SUMMARY AND DISCUSSION

Background

The two studies reported herein are pilot experiments in an area of growing concern: The effect of parents on children's reading performance. A comprehensive 95-item literature review identified manipulable characteristics of parents associated with reading performance of children. That review plus previous experience with parent training and a pilot laboratory investigation of parent-child interaction among "high verbal" and "low verbal" girls provided the background for development and implementation of a training program. The results of the two studies are reported separately below.

STUDY ONE

A Laboratory Investigation of Reading Achievement and Maternal Behavior

Objectives.--The major purpose of this study was the identification of mother characteristics associated with reading performances of children. Specifically mothers of high verbal and low verbal girls were compared as to their behavior in two semi-structured interaction situations on the following dimensions:

1. Opinion differences with daughters (Hypothesis: $HV < LV$)
2. Positive affect (Hypothesis: $HV > LV$)

3. Negative affect (Hypothesis: HV < LV)
4. Total warmth (Hypothesis: HV > LV)
5. Total Talk (Hypothesis: HV < LV)
6. Frequency of initiation of discussions (Hypothesis: HV < LV)

Procedures

Sample.--Ten high verbal and ten low verbal sixth grade girls with their mothers constituted the sample of this study. High-verbals had a verbal IQ 15 points above their non-verbal IQ and low-verbals had a non-verbal IQ 15 points or more above their verbal IQ. High verbals also had reading scores 1.1 grades or more above their grade placement and low verbals had reading scores 1.1 grades or more below their grade placement. Both groups had total IQ's of 105 or greater.

Semi-Structured Situations.--Interaction of mother and daughter pairs was observed in two tape-recorded situations. A vocabulary review session was set up wherein the child had studied the material prior to the session and both mother and daughter were given a review sheet for discussion. The mother's sheet included answers to review questions. An opinion difference discussion was set up wherein mother and daughter were asked to try to arrive at some agreement on opinion items (from a previously administered test) on which they differed.

Design.--A simple matched group design was used because of the necessarily small sample. High-verbals and low-verbals had the same total I.Q's and were matched on socio-economic status. Data analysis was limited to simple one-tailed t-tests consistent with the directional hypotheses.

Results.--Mothers of high verbal girls demonstrated significantly more positive affect, less negative affect and more total warmth than mothers of low-verbal girls. Other differences were in the predicted direction but not statistically significant at the pre-established .05 level or beyond. The treatment (being a mother of high or low verbal girls) accounted for 70 percent of the variance in positive affect and 57 percent of the variance in negative affect and total warmth.

STUDY TWO

The Effect of a Parent Training Program Upon Reading Achievement of Children

Objectives.--The two major hypotheses tested in this study are:

1. Pupils whose parents are involved in a training program will show greater oral and silent reading regressed gains than a control group whose parents are not involved in the program.

2. Mothers' attitudes as measured by the PARI (Parental Attitude Research Instrument) Factors I, II, III are significantly correlated with oral and silent reading regressed gains.

Sample.--A sample of forty remedial reading students in grades three to six in two elementary schools (20 experimentals and 20 controls) reduced to 13 experimentals and 16 controls due to moving, lack of parental interest, or infrequent attendance during the time of the study.

Pupil Measures.--In September, all pupils were administered the California Reading Test, Elementary Level, Form X, as a measure of silent reading achievement and the Gilmore Oral Reading Test, Form A. Alternate forms of these tests were administered during the week beginning January 28th.

Parent Measures.--During the second week of September all mothers were administered the PARI (Parental Attitude Research Instrument). A post-treatment administration was not carried out as intended because an unexpected contamination occurred when many of the experimentals were found to be involved in another project in which the PARI was administered and discussed.

Design.--Parents and children were randomly assigned to experimental and control groups after an initial sample of children and parents was selected as described above. All pupils were in a school remedial reading class receiving instruction in groups of 2 to 5. Mothers of experimentals were in a training program during the course of the study and controls entered the training program after post-test data on children was obtained.

The Parent Training Program

Fourteen once-a-week formal sessions from September 15 to December 15 were held with experimental parents. Each parent participated in two individual sessions at their home or the university during that period. From December 15 to January 28 parents met individually with experimenter to discuss the progress of their children. The parent training program is outlined in the body of the report.

Results.--

1. There was a significant difference (.10 level) between experimental and control groups on regressed gains on the California Reading sub-test, Reading Comprehension favoring the control group. However, Vocabulary and Total Reading in silent reading measure did not differ significantly between groups.
2. Experimentals had significantly higher regressed gains on Gilmore Oral Reading accuracy (.05), Comprehension (.02), and Rate (.10).
3. None of the PARI Factor I (approval of maternal control of the child) or Factor II (approval of expressions of hostility) were significantly correlated with any of the six reading

achievement measures. However, Factor III (approval of positive attitudes toward child-rearing) was significantly correlated with silent reading comprehension (.05) and oral reading rate (.10).

Discussion.--The exploratory work in this study has supported previously published data concerning the effect of parent factors on reading achievement. Specifically maternal warmth has been found to be reliably associated with pupil achievement in reading in both a laboratory investigation of actual parent behavior in structured discussions with their own children as well as in the larger treatment study. Putting together the results of our studies and those reviewed we find the following parent behavior patterns associated with reading performance of children.

1. Parent pressure or aspiration for the extent of the child's schooling.
2. Number and quality of cultural activities provided for the child including books and toys in the home and places visited.
3. Allowing participation by children in mealtime conversations beyond talk about food.
4. Presence of emotionally positive or warm parent interaction with the child.
5. Participation by parents in training programs focussed on one or more of the above behavior patterns as well as other behavior patterns characteristic of our own program.

Our studies, though they were small sample pilot projects, have made several contributions to previous work including: Use of regressed gain scores, the development of a semi-structured interaction situation on a reading task, the development of hypotheses for further investigation, and the clarification of training problems requiring further development.

One hypothesis generated by this study comes from the result in the laboratory study conflicting with Bing's study showing that mothers of high verbal girls showed significantly more disapproval and withholding of help than mothers of low verbal girls. This discrepancy is of particular interest since the studies were so similar. They both observed behavior in a laboratory interaction situation. Bing's study was on fifth grade girls and boys and ours on sixth grade girls and her results for girls alone are those reported here. Also, her definition of high and low verbal ability was similar to that used in our study. One plausible and testable exploration of this discrepancy is that withholding help and disapproval is characteristic of mothers of high verbal children when built on a previous history of much warmth and approval in early childhood plus a present history of much warmth along with the disapproval and withholding of help.

Another line of research that follows from the study just completed is the identification of the amount of variance in dependent variable measures accounted for by specific parts of the treatment program. In our study two treatment accounted for 16 percent of the variance in oral reading accuracy and 25 percent of the variance in oral reading comprehension. It might well be that a more limited treatment could account for as much variance. Or, if we could find out what part of the treatment accounts for most of the variance that part might be made even more effective. Or alternatively treatment parameters not accounting for dependent variable variance may be studied to determine whether revisions in the treatment might make it more productive.

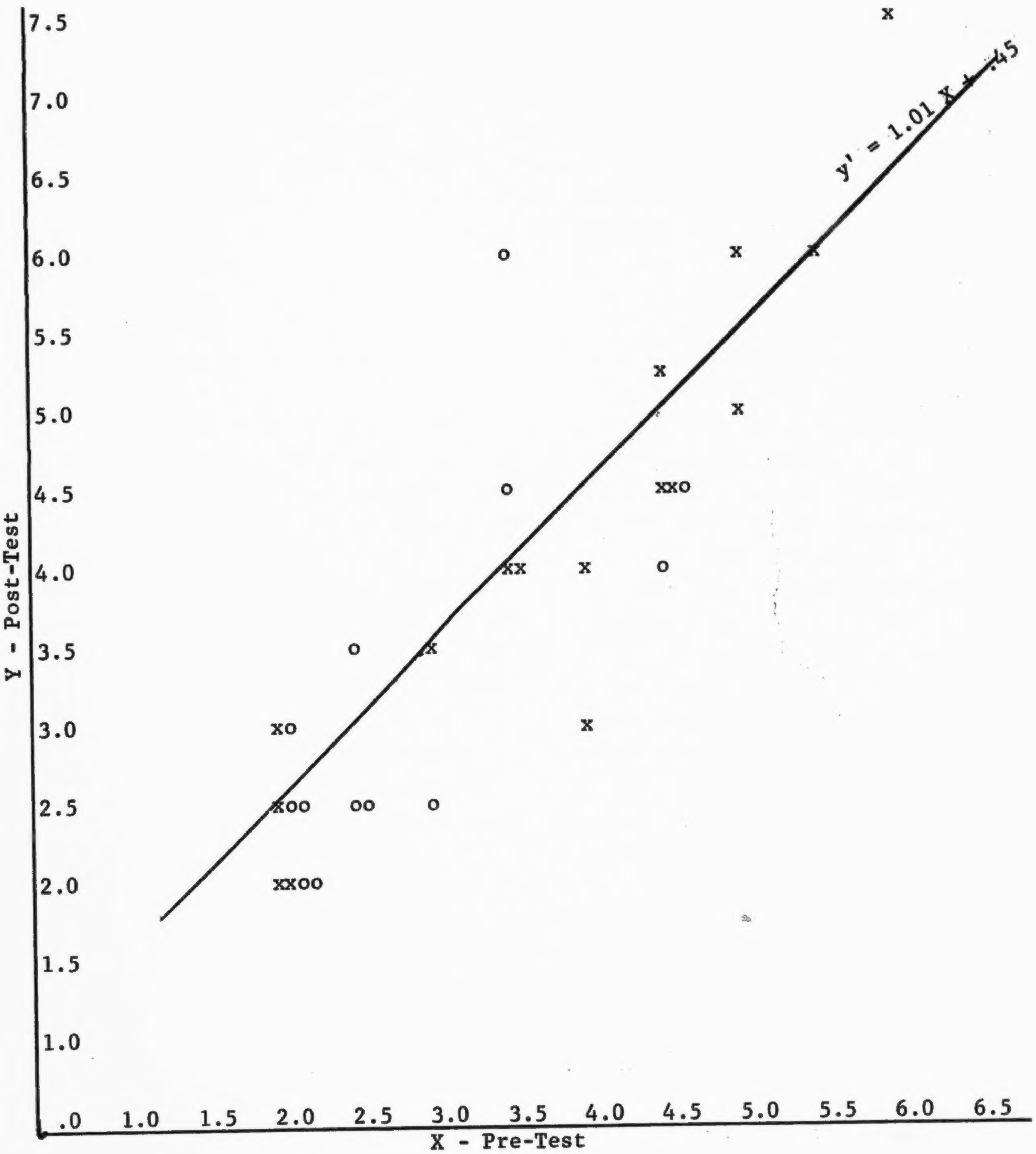
Finally, specific problems in implementing the treatment program have been identified. Some of these suggest modifications in the training program. Thus, we found ourselves moving further away from technical jargon as we became involved with parents who had little formal schooling or little interest in our jargon. Also, we found that when we introduced sessions in which theylooked at a profile of their own children's performance in reading, we had more attentiveness and more follow through on treatment suggestions. Thus, we would put specific case data on their children earlier in our next parent program. Many parents were in such conflict with each other or were so busy with two jobs, children, etc. that they could not manage much time on the program. Others, who could have arranged more time, were according to their own reports "too busy," "sick," or "will be there next time." We found ways eventually of getting to many of these parents, but our inexperience caught us unprepared to cope early with the problem. Thus, we would make a major part of our next training program the identification of "foot-draggers" and implementation of ways of getting them out to our sessions. Two of the most difficult problems faced by most parents in implementing contingency management were: Identifying events that were reinforcing and trying out new behavior patterns inconsistent with their current behavior. One of the contributions of our study was the preliminary development of procedures for helping parents to identify reinforcers using the work of Premack and Ligon as our guides. Another contribution was the preliminary development of special procedures for helping a parent to break a habit interfering with her trying out of a new behavior pattern. These two training innovations will be further developed for future training programs.

Other future developments should include emphasis on father participation or (in the case of father absence) some significant other adult follow-up of parent attitude and behavior change as well as pupil gains, and development of measures of more specific behaviors related to the training program.

APPENDIX A

SCATTERPLOTS FOR CORRELATIONS

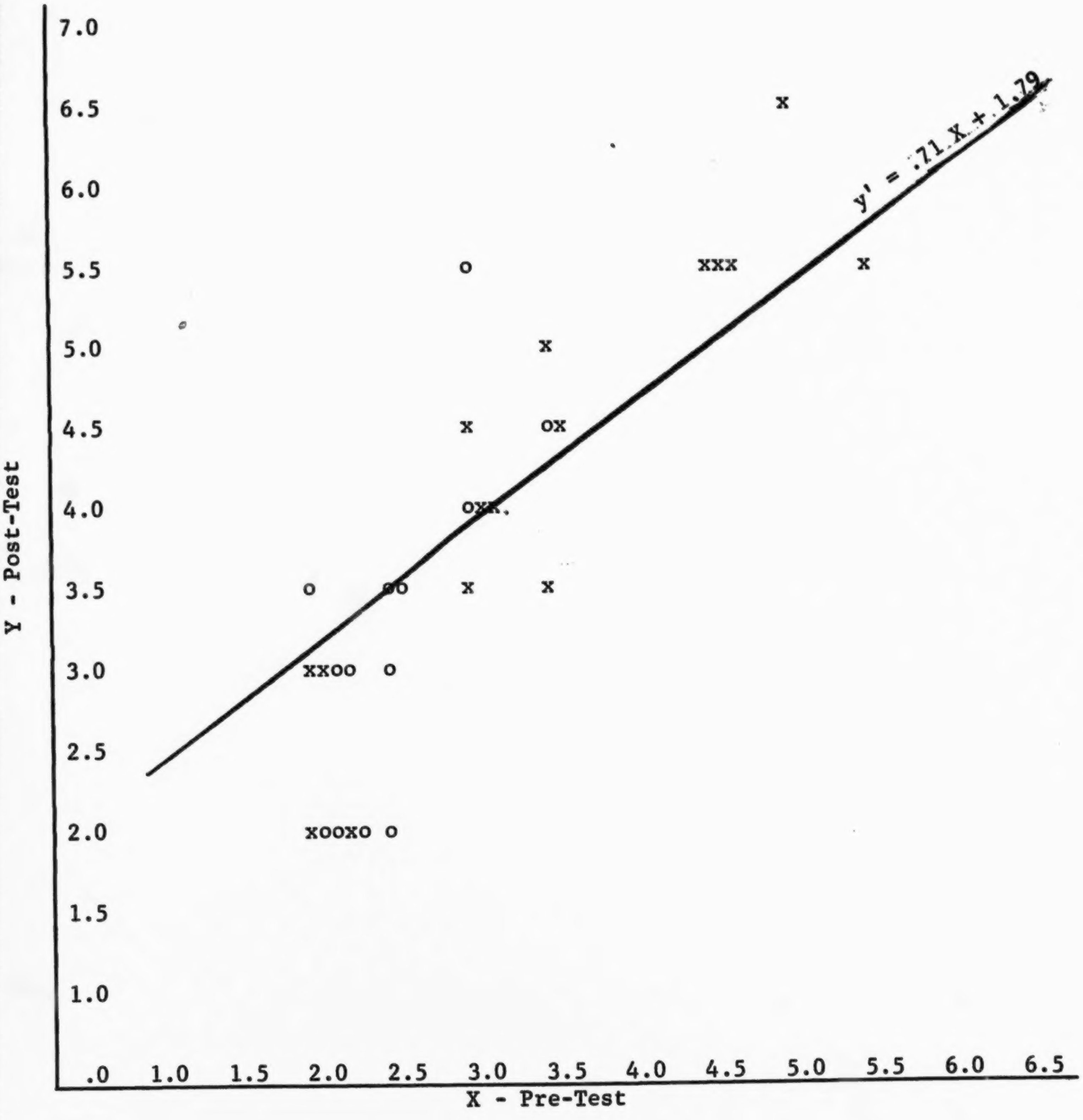
CALIFORNIA READING--VOCABULARY



x = Control; o = Experimental

$S_{y \cdot x} = .66$; $r = .89$

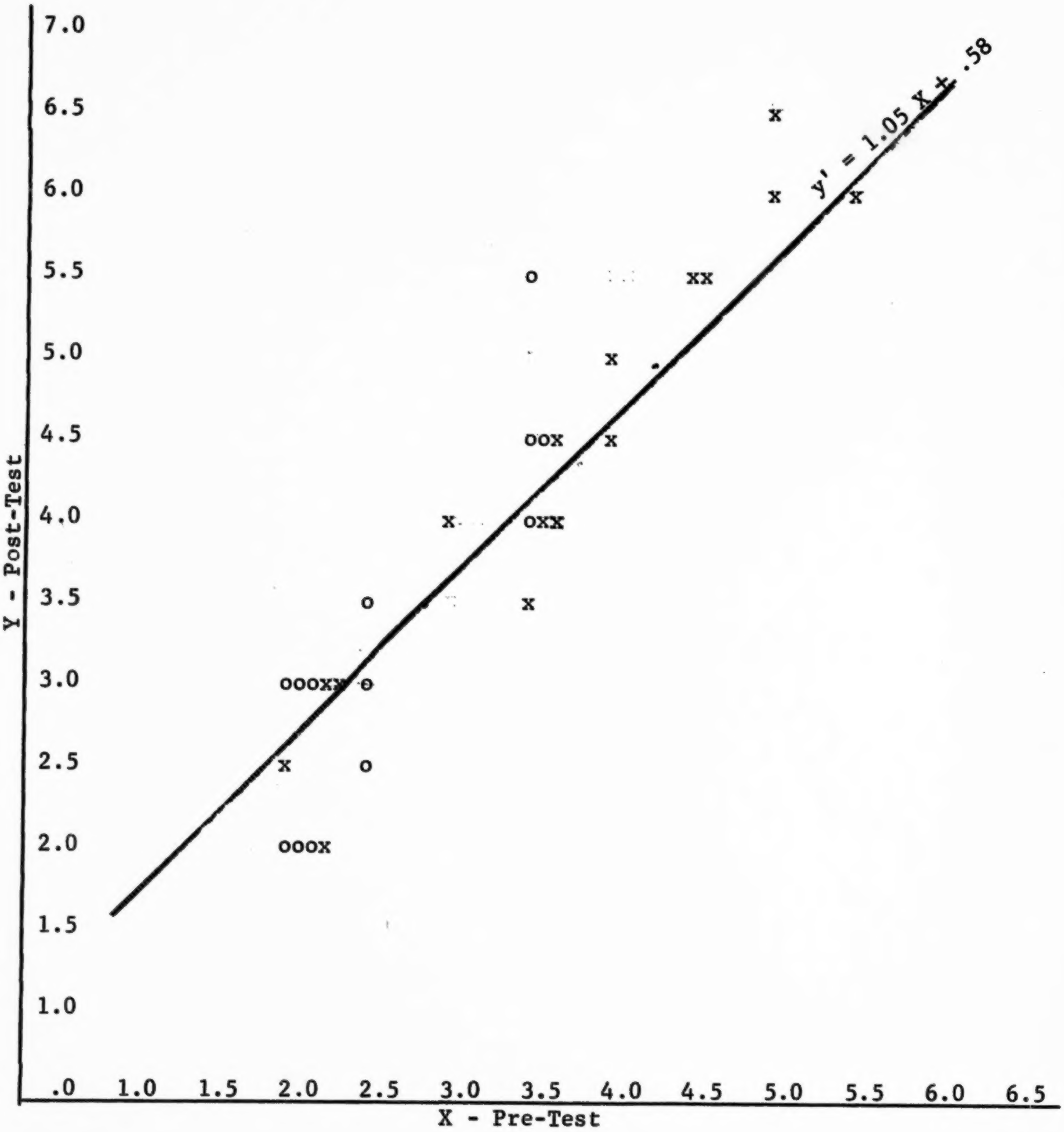
CALIFORNIA READING--COMPREHENSION



x = Control; o = Experimental

Xy · x = .61; r = .88

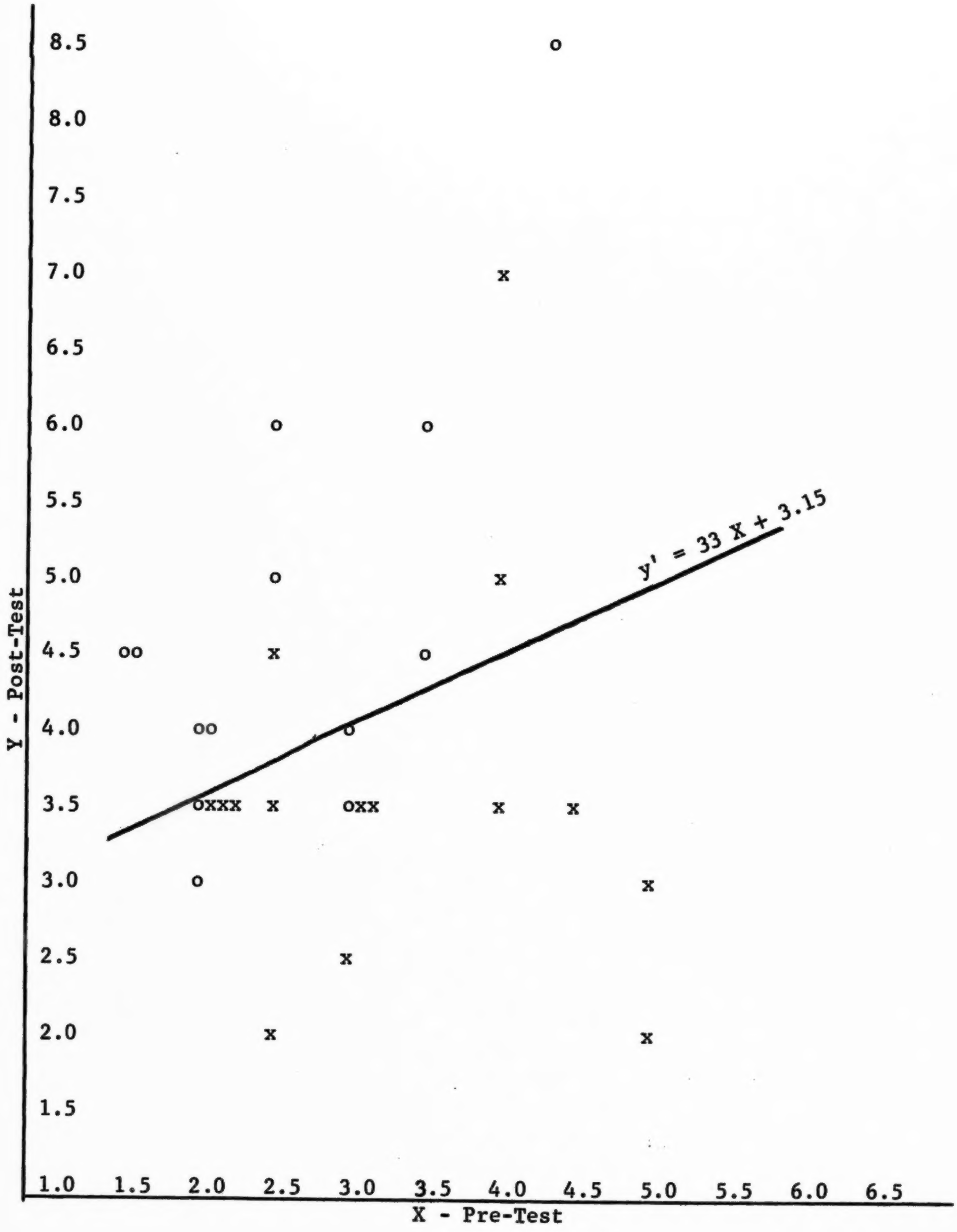
CALIFORNIA READING--TOTAL



x = Control; o = Experimental

Sy · x = .54; r = .91

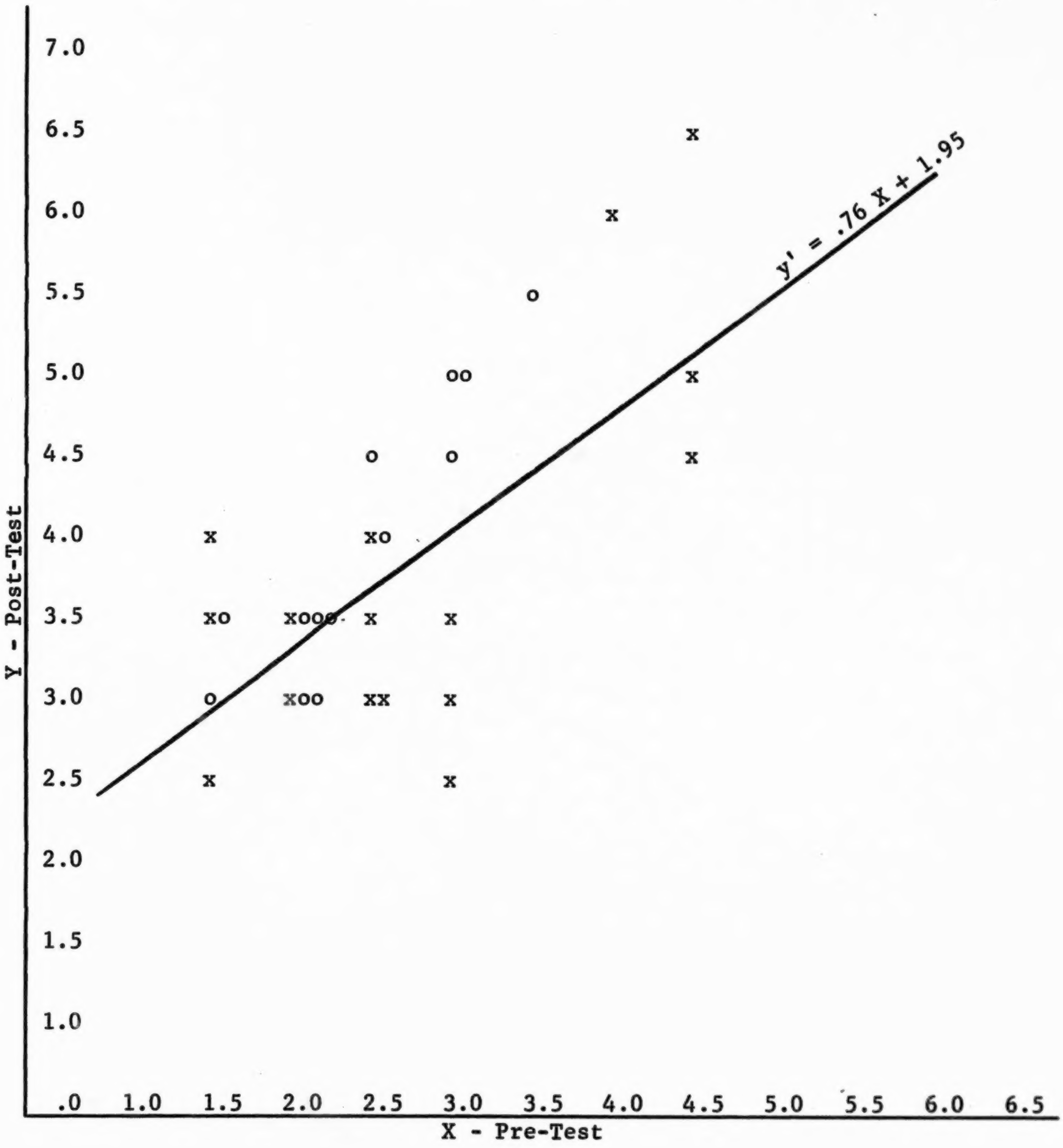
GILMORE--COMPREHENSION



x = Control; o = Experimental

Sy · x = 1.43; r = .25

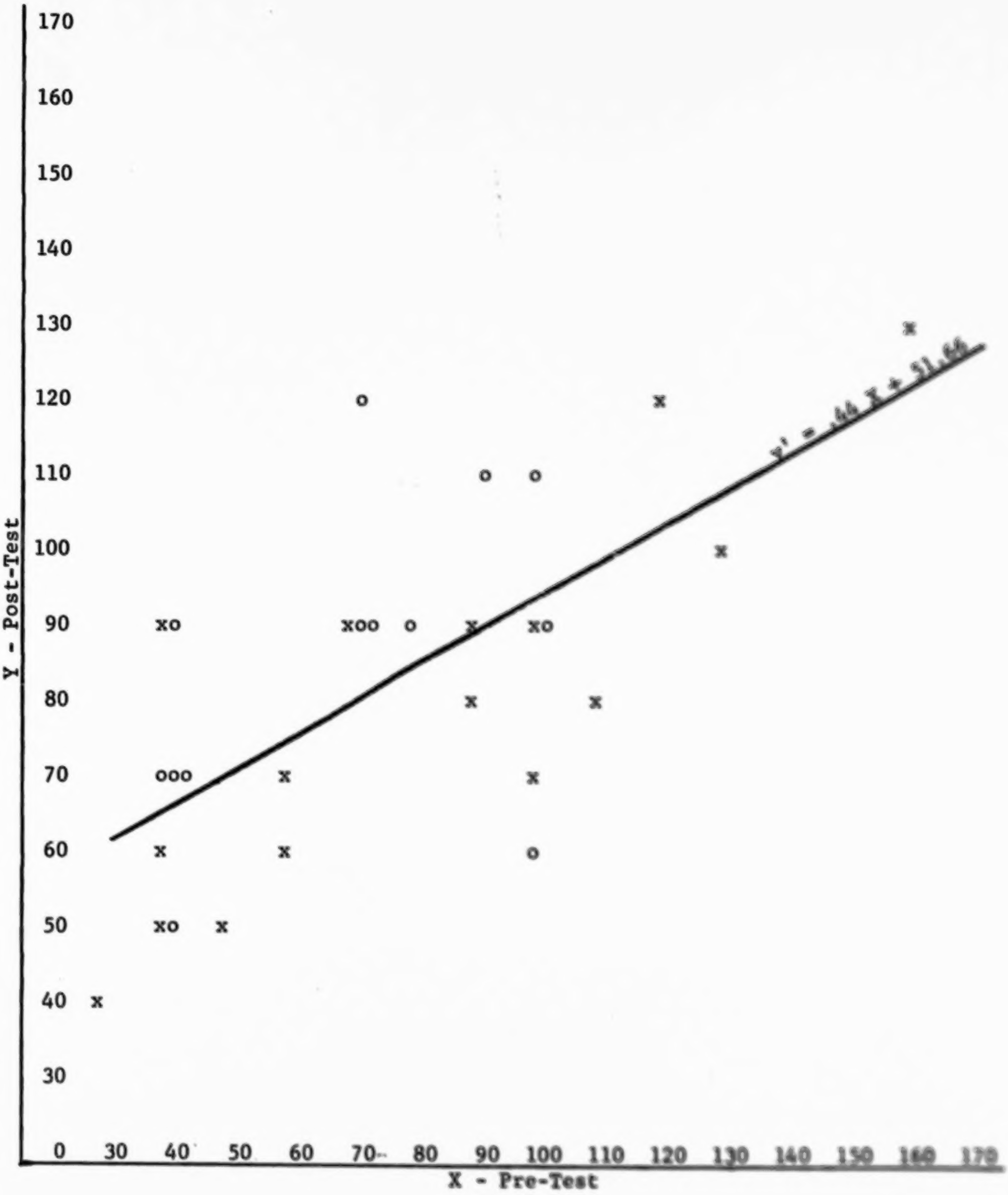
GILMORE--ACCURACY



x = Control; o = Experimental

Sy · x = .66; r = .72

GILMORE--RATE



x = Control; o = Experimental

$S_{y \cdot x} = 16.35$; $r = .67$

APPENDIX B

LETTERS TO PARENTS

May 14, 1965

Mr. __________

Dear Mr. __________:

We will be conducting a special reading program in your school next fall for children who are capable of reading much better than they are now reading. This program will be conducted cooperatively by the Salt Lake City Schools, the State Department of Public Instruction and the University of Utah with some financial support from the U. S. Office of Education.

Your child __________ may be selected to participate. The program will involve individualized lessons for children. Also, we will be studying what parents can do to help their children in school.

There will be no charge to children or parents. If you wish to participate, please complete the enclosed blank and return it in the enclosed, stamped envelope. You will hear from us later

Sincerely,

____

Gabriel Della-Piana
Project Director

____

Helen Martin
Remedial Teacher

August 18, 1965

Dear Mr. and Mrs. __________:

Congratulations! Your child has been selected for the special reading improvement program during this school year.

You have been selected to participate in the parent class. The first meeting will be held on Wednesday, September 15, 1965, at 8:00 p.m. in Room 310 Milton Bennion Hall (The Education Building) on the University of Utah Campus. A map is enclosed.

At this first meeting we want only mothers. After the first meeting, we welcome fathers, too. Please phone 322-7148 or 266-9613 if you have a time conflict.

Sincerely,

Gabriel Della-Piana
Director
Bureau of Educational Research

GDP:cb

Enclosure

September 16, 1965

Mrs. ___________

Dear Mrs. ___________:

This is a reminder! We missed you at the first meeting of our parent study group. If you will come next Wednesday (September 22, 1965) at 7:30 p.m., we can bring you up to date on what you missed. Remember, the place is 310 Milton Bennion Hall (The New Education Building).

If you cannot attend these meetings, we will have to arrange for your child to drop from the reading class in his school this year and take it next year instead. If you cannot come, please call me at 322-6401 or 322-6402.

Sincerely,

Gabriel Della-Piana
Director

GD:lh

(This letter was followed up by a phone call and/or visit if the letter was not effective.)

APPENDIX C

TABLES

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR THE SEPTEMBER AND JANUARY GRADE PLACEMENT OF THE CONTROL AND EXPERIMENTAL GROUPS

September	Mean	Standard Deviation
Control	3.7	0.9
Experimental	4.8	1.1
January	**Mean**	**Standard Deviation**
Control	4.2	0.9
Experimental	5.3	1.1

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR THE SEPTEMBER AND JANUARY TESTING IN ORAL READING (GILMORE ORAL READING TEST), CONTROL AND EXPERIMENTAL GROUPS

	Mean	Standard Deviation
Control Group		
September Testing		
Accuracy	3.0	1.0
Comprehension	3.3	1.2
Rate	85.9	38.2
January Testing		
Accuracy	4.0	1.1
Comprehension	4.5	1.3
Rate	83.5	24.1
Experimental Group		
September Testing		
Accuracy	2.6	0.6
Comprehension	2.7	0.9
Rate	70.3	24.1
January Testing		
Accuracy	4.2	0.7
Comprehension	4.8	1.4
Rate	91.1	18.5

TABLE 3

MEANS AND STANDARD DEVIATIONS FOR THE SEPTEMBER AND JANUARY TESTING IN SILENT READING (CALIFORNIA READING TEST), CONTROL AND EXPERIMENTAL GROUPS

Control Group	September Testing	Mean	Standard Deviation
Vocabulary		3.9	1.3
Comprehension		3.5	1.1
Total Reading		3 7	1.2
	January Testing		
Vocabulary		4.4	1.5
Comprehension		4.4	1.3
Total Reading		4.5	1.3

Experimental Group	September Testing	Mean	Standard Deviation
Vocabulary		2.9	1.0
Comprehension		2.5	0.5
Total Reading		2.7	0.7
	January Testing		
Vocabulary		3.4	1.2
Comprehension		3.4	1.0
Total Reading		3.5	1.1

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR THE *CALIFORNIA TEST OF MENTAL MATURITY*, CONTROL AND EXPERIMENTAL GROUPS

Control Group: N = 16

	Mean	Standard Deviation
Language I.Q.	80.7	7.8
Non-Language I.Q.	91.9	8.1
Total I.Q.	84.4	6.8

Experimental Group: N = 13

	Mean	Standard Deviation
Language I.Q.	86.6	6.2
Non-Language I.Q.	99.5	11.5
Total I.Q.	91.5	8.2

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR THE MOTHERS' PARENTAL ATTITUDE RESEARCH INSTRUMENT FACTOR SCORES, CONTROL AND EXPERIMENTAL GROUPS

Control Group	Mean	Standard Deviation
Factor I	168.7	29.0
Factor II	50.5	7.7
Factor III	64.7	6.5

Experimental Group	Mean	Standard Deviation
Factor I	164.3	23.6
Factor II	58.2	7.0
Factor III	65.4	6.8